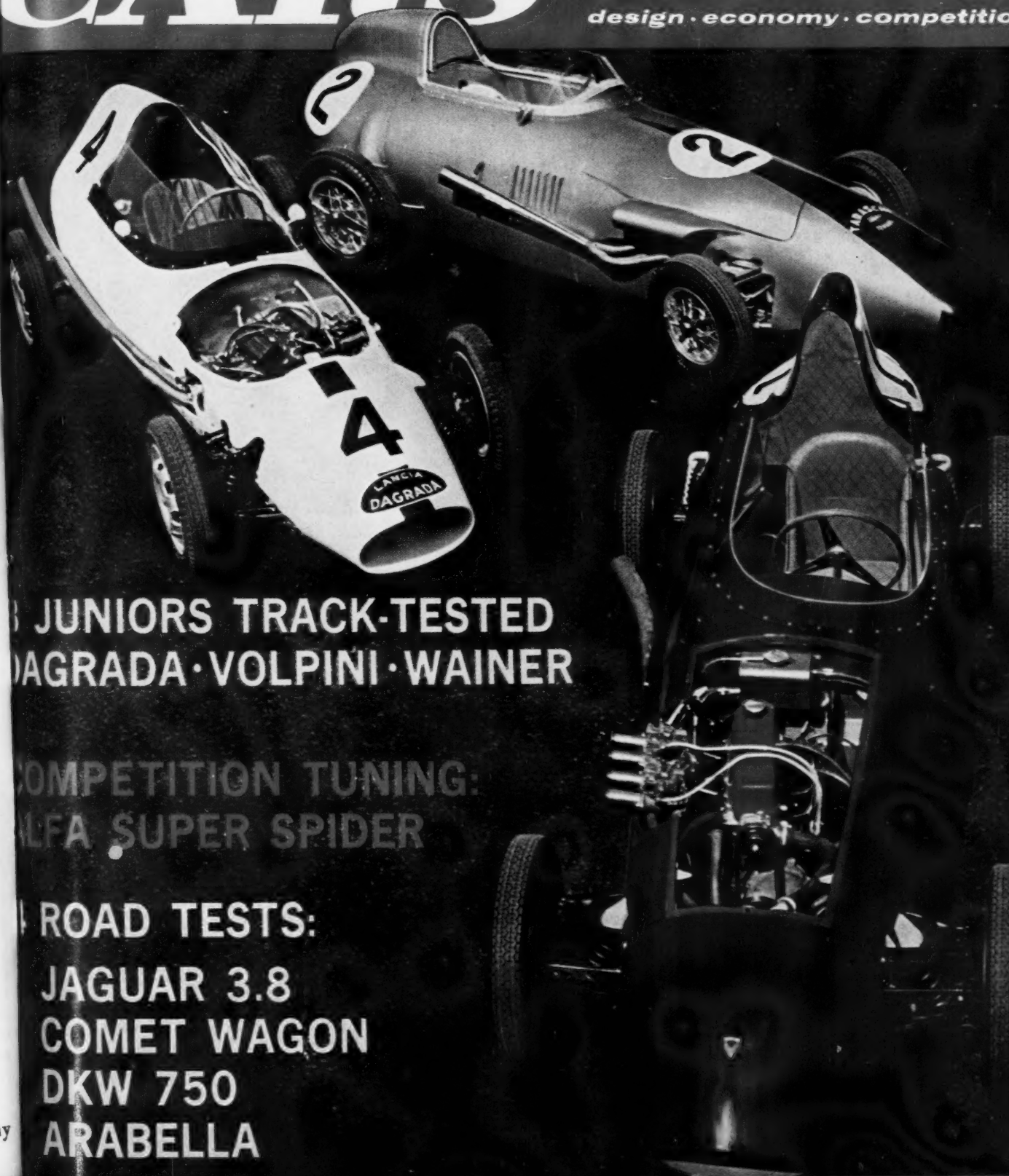


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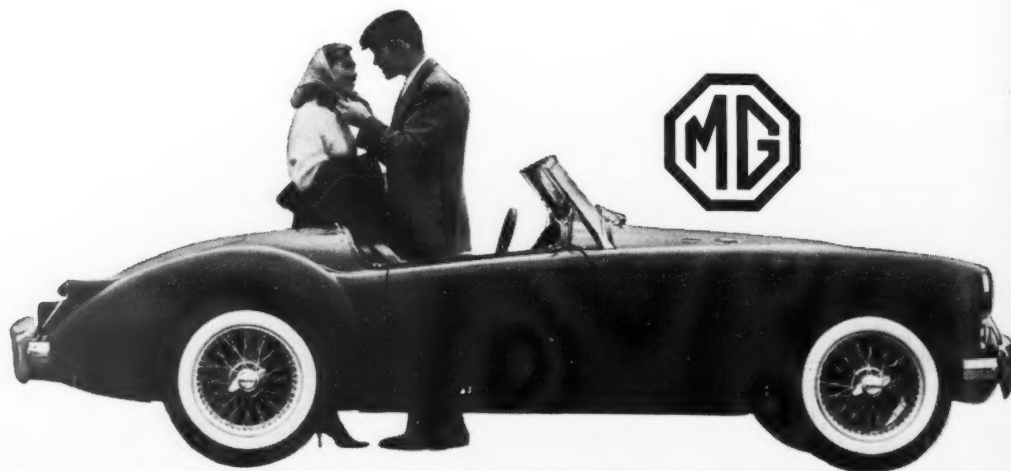
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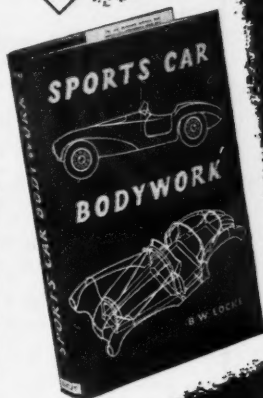


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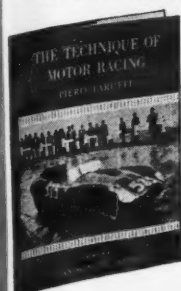


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design • economy • competition

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Our cover this month serves to highlight the Formula Junior track test starting on page 27. The car standing in for the Wainer in Irv Dolin's photograph is the Taraschi. All four makes are sold in this country by that man about Juniors and fast cars in general, Martin Biener.

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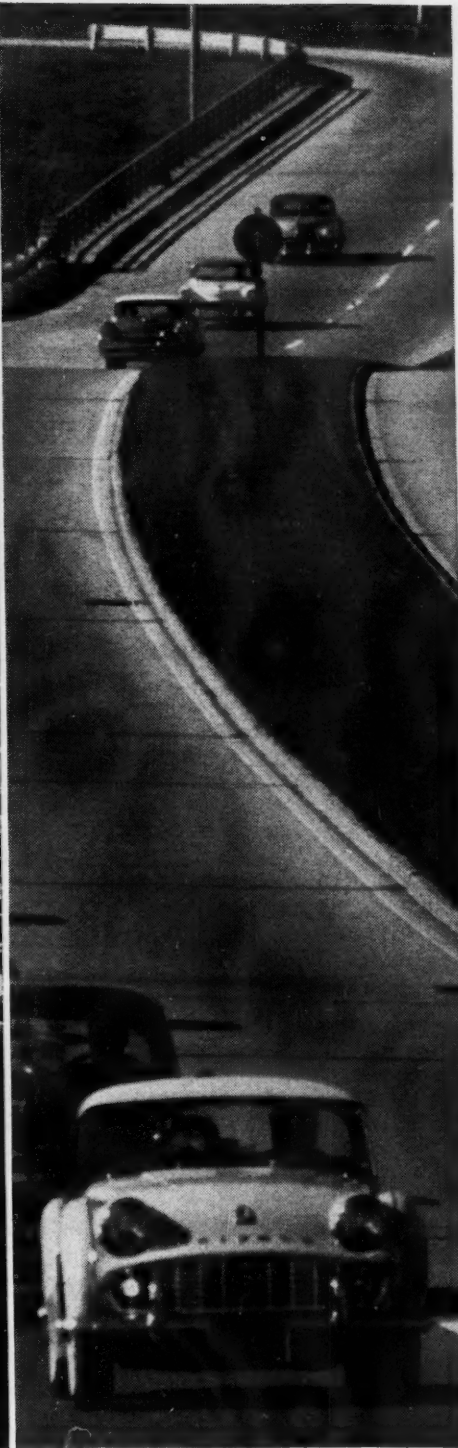
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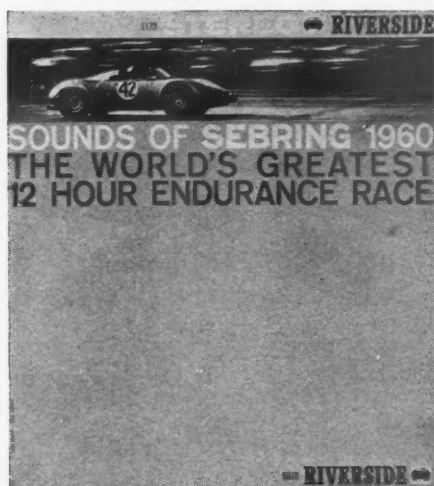
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# OBSERVATION AND OPINION

**SURVIVAL FOR GREATNESS**—On page 30 of last month's SCI Dennis May wrote these lines about Chris Bristow: "They knew he was good; they were pretty sure he could be great. But greatness is something you have to survive to achieve." Volatile Chris lost his bid for greatness on June 19th at Spa when he was killed after his Cooper left the road on one of those fast, drifting bends that makes that track a separator of the men from the lads. Young Alan Stacey died there too, on the same day the seemingly indestructible Jimmy Bryan was killed at the beginning of the 100-miler at Langhorne.

The finishing order at Spa was this: Brabham, Cooper; McLaren, Cooper; Gendebien, Cooper; Hill, Ferrari; Clark, Lotus, and Bianchi, Cooper. Both Scarabs ran but didn't finish. With four races done, Cooper's fast fledgling Bruce McLaren still leads in Championship points. Here are the standings: McLaren 20; Brabham 16; Moss 11, and 7 each for Phil Hill and Innes Ireland. Next month we'll have the whole story on the 134-mile-per-hour speedfest at Spa, plus reports in depth on Le Mans, the French Grand Prix, and the inaugural races at two American tracks: Roosevelt Raceway and Louisiana Hilltop Raceway. Alongside these there's a provocative report from Griff Borgeson on a brand of road racing down Mexico way that's the most exciting "since Auto Union vied with Mercedes."

**JESSE-ON-THE-SPOT**—So many racing events came crowding into this issue that we had to take a breather, for the first time, on our Road Research Report. We'll make up for it in two ways. For one, this month we've driven and tested a total of eight cars. For the other, next month there'll be an R.R.R. on one of the most violently exciting and totally satisfying sports cars we've ever tried.

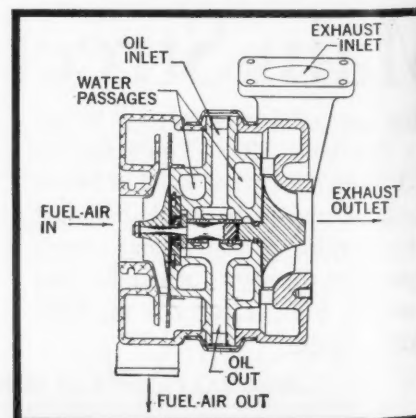
SCI's man on the spot, Jesse Alexander, has really done himself proud in his latest race reports. His sequence on the Nürburgring holocaust imparts the same urgent terror conveyed by the event itself. When Moss gave the G.P. Scarab its most polished drive to date at Monaco, Jesse was there to record it. And when Dan Gurney went smoking off the track at Zandvoort, front wheels locked helplessly solid, Alexander was on the spot. In these stories and in his personality portraits, like the Conrero vignette on page 40, Jesse provides the kind of insight and background that can only be supplied by a man who knows the people, knows the cars, and loves his work.

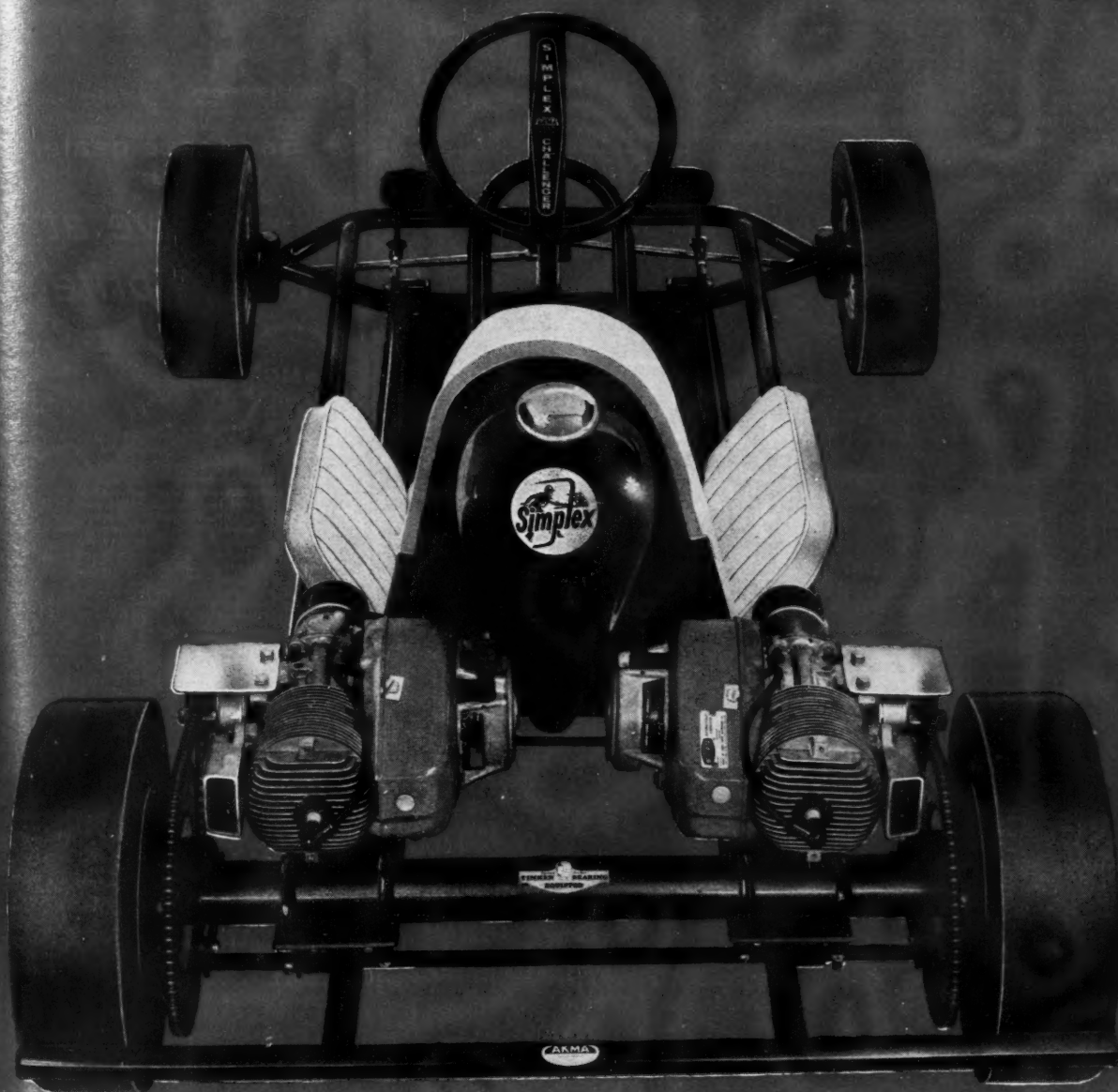
**WELCOME BACK**—If you turn to page 25 you'll greet an old friend that's been absent from these pages far too long: the Technotes department. In Technotes, as before, we'll be glad to answer any technical queries you may have and to print any maintenance or construction hints you'd like to pass on to other readers. This will, however, be the only way we'll be able to reply to your technical questions. Much though we'd like to, we can't reply individually to all the inquiries we receive at our offices. Instead, Technotes will feature problems and solutions of maximum interest to a maximum number of our readers.

**BOOTSTRAP BOOSTING**—Exactly three years ago Bill Carroll explained turbocharging to SCI readers—a type of supercharging that uses exhaust pressure to spin a centrifugal blower—and outlined its position and prospects. One drawback, that of slow response to the throttle, has been minimized by a new turbocharger design from the Valve Division of Thompson-Ramo-Wooldridge. They've cut the mass of the spinning turbine and compressor as much as they could, to reduce rotating inertia, and used engine water and oil for cooling and lubrication.

Use of the supercharger as a power-increasing option has always been frustrated by the fact that it's easier and cheaper to bore and stroke, from the production standpoint. But now new aluminum engines are about to be introduced which are cast in more costly molds, far more difficult to alter at will. Blowing may finally be the most convenient way to maintain the traditional annual power increase.

—Karl Ludvigsen





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# LETTERS

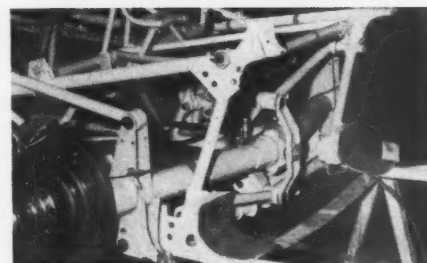
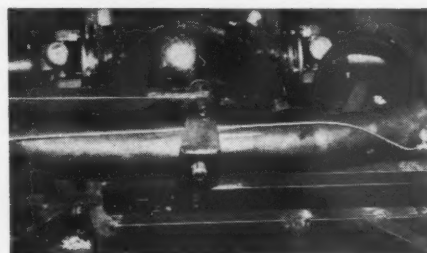
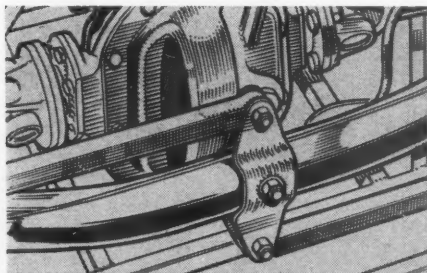
## "WHAT LINKAGE?"

The Gordon GT (May '60) is quite a car but really, that sketch of the de Dion setup on page 45 is too much. The vertical link must have three bearings in order to function. The way it's shown, the vertical link is clamped to the de Dion tube. This won't work unless the other two links are expandable and contractable, which isn't likely.

Brian Powell  
North Hollywood, California

Perhaps I am missing something . . . but it appears entirely possible that vertical motion of the rear wheels would stress, if not fracture, the frame. Two solutions are applicable to prevent damage. One, provide a pivot between the linkage and de Dion tube. Two, provide some degree of freedom laterally at left frame rail (not shown in picture). This latter idea would result in asymmetrical axle location, i.e. rear-end steering, which is not the desired result. Maybe this all works on the basis of rubber bushings or an elastic frame cross-member, but if so, the idea sounds unbelievable.

Edward M. Parker  
New Canaan, Connecticut



Readers Powell and Parker are perceptive. Our drawing (reproduced above) in the story on the Gordon GT would lead persons examining it to believe that the center bar of the Watt linkage was clamped to the tube, contrary to its principle. The middle photo shows the actual Gordon rear end, including the very real pivot point. Below it is a photo of a similar setup on an Aston Martin which shows a

similar Watt linkage layout in an exaggerated perspective. It's encouraging to find that so many readers know Watt linkage is not the same as "What Linkage?"

## LOZIER OWNER

Your July, 1960 issue was received and thoroughly enjoyed here, but I was disappointed after reading the Lozier article to find no mention of the 1913 Model 72 pictured on the front cover. We here in Cleveland are very proud of that car and its owner, Mr. Thomas J. Lester of Moreland Hills, a suburb of Cleveland. This car has been the winner of many national awards. The photograph you have on the cover was one taken, no doubt, at the Thompson Raceway during the Anglo-American Vintage Sports Car Rally, when Mr. Lester and this Lozier really did our country proud. In fact, I believe that this car was just about the fastest in the Rally, and there were twenty-odd cars involved dating from 1910 to 1929.

B. Scott Isquick  
Cleveland, Ohio

## ASTON UNCOVERED

I was most interested to read the article you recently (February, 1960) published on our Formula 1 car, and do congratulate you on a remarkable sectional drawing because, as far as I know, neither the artist nor anyone else has seen the car completely stripped. There are one or two minor errors but Reg Parnell was particularly impressed by the accuracy.

Alan Dakers  
Aston Martin Lagonda Ltd.  
London, England

## BMC VS. BMW

After reading your extensive test report on BMC's 850 Austin (SCI, June, 1960), I wonder why one new car receives so much attention and a comparable model so little. I must admit I found the 850 an appealing package, but not superior to the BMW 600 introduced about two years ago with hardly more than a whisper in any of the major auto publications. You state the 850 is probably the smallest full-size (by European standards) car ever. Four passengers would enjoy every bit as much room in the BMW as the 850. Rear seat room in the BMW was substantially better. Seat construction in the BMW is more comfortable and has the look of higher quality material and workmanship. Trunk space is about the same—small, but with two passengers, the BMW's fold-down rear seat gives it quite an edge.

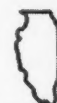
The BMW's large front-opening door, inherited from the Isetta 300, has some definite pros and cons, but I have found it very handy particularly where parking places nose into the sidewalk. The second door, on the right side for the rear seat, makes entry and exit much easier than crawling over tilted front seats as in the 850. The BMW instrument and control placement is very good, the heater is effective and the steering wheel position and foot pedals are the most comfortable of any little car I have driven. I found the ride and handling of the 850 excellent

(Continued on page 8)

Austin-Healey Sprite

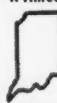


See these dealers  
for your  
"Love at  
First Sprite"



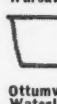
## ILLINOIS

Alton, Cordes Motor Co.  
Barrington, Bender-Rieger, Inc.  
Belleville, Oliver C. Joseph, Inc.  
Belleville, Oliver Plymouth  
Berwyn, Walter Schroeder Motors, Inc.  
Bloomington, Rust Cadillac Co.  
Carbondale, Hunter Motor Co.  
Champaign, World Wide Motors  
Chicago, Lee Alan Imports  
Chicago, Delta Import Motors, Inc.  
Chicago, Hensen Import Motors  
Chicago Heights, Northtown Motor Co.\*  
Danville, Shakespeare Motors  
Decatur, Midwest Rambler Corp.  
DeKalb, Sawyer Service Station  
Granite City, Swenson-Marusic Buick Co.  
Hinsdale, Hinsdale Import Motors  
Jerseyville, Cape Motor Co.  
Mt. Prospect, Bender-Rieger, Inc.  
Mt. Vernon, W-G Motors, Inc.  
Olney, Eaglen Olds-Cadillac Co.  
Peoria, Character Cars, Inc.  
Rockford, Forest City Imported Cars, Ltd.  
Springfield, Rallye Motors, Ltd.  
Streator, Samors Motor Co.  
Wilmette, Imperial Motors, Inc.



## INDIANA

Fort Wayne, Cloverleaf Motors, Inc.  
Gary, Snowdon Motor Sales  
Indianapolis, Imported Cars, Inc.  
Indianapolis, Monarch Auto Sales, Inc.  
Jeffersonville, Fall City Auto Imports, Inc.  
Lafayette, O. M. Foxworthy, Inc.  
Logansport, Lou's Imported Motors  
Michigan City, Frick Motors, Inc.  
Muncie, Dutch Hurst Motors  
Richmond, Brown Motor Co.\*  
South Bend, Hoosier International Motors  
Valparaiso, Grieger Motor Sales  
Warsaw, Hoosier International Motors



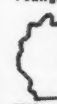
## IOWA

Burlington, Ingham Motor Sales  
Davenport, Tri-City Foreign Cars, Inc.  
Des Moines, Goodman Motor Company  
Fort Dodge, Johnston Import Motors  
Ottumwa, Glover Motor Co.  
Waterloo, Marken Motor Co.



## OHIO

Akron, Mallen Motor Corp.\*  
Cadiz, Long Motors, Inc.  
Cambridge, Cambridge Sport Shop  
Cincinnati, Charles Raymond, Inc.  
Cleveland, Car France, Inc.  
Cleveland, MG Motor Sales, Inc.  
Cleveland, Quality Auto Sales, Inc.  
Cleveland Heights, Jaguar-Cleveland Motors, Inc.  
Columbus, Eastway Sports Cars, Inc.  
Columbus, Imported Motor Car Co.  
Cuyahoga Falls, Akron Cars, Inc.  
Dayton, Car Imports of Dayton, Inc.  
East Liverpool, East Liverpool Central Service Co.  
Mansfield, Suburbanite Motors of Ohio, Inc.  
Massillon, Stark Sports Cars, Inc.  
Reading, Continental Motors, Ltd.\*  
Sandusky, Sandusky Imported Motors  
Spencerville, Jack Hardesty, Inc.  
Toledo, Foreign Cars of Toledo, Inc.  
Warren, Mahan's Imported Autos, Inc.\*  
Willoughby, Stoddard Imported Cars, Inc.  
Youngstown, Red's Foreign Car Imports, Inc.\*



## WISCONSIN

Appleton, Biddle Foreign Cars  
Fond du Lac, Biddle Foreign Cars  
Madison, Foreign Cars of Madison, Inc.  
Marinette, Grant Gordon  
Milwaukee, Louis Auto, Inc.  
Milwaukee, Wisconsin Auto Sales Co.  
Sheboygan, Roeward-Thomson, Inc.  
Wisconsin Rapids, Baker Pontiac  
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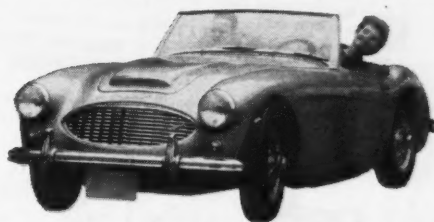
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Volvo 1 outlet (All)	12.50
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VW 1955 on	24.95
Dauphine Dual outlet	15.50
4CV 1 outlet	9.25
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Ford Mk 11 Consul (late)	18.50
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- FEDERAL EXCISE TAX INCLUDED IN ALL PRICES
- DEALER INQUIRIES INVITED
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(Continued from page 6)

but I feel the BMW's four-wheel independent, on coils, is better than the rubber units. The BMW's four-speed synchromesh gearbox has a real Porsche feel but in the engine department, BMW really shines. The rear-mounted horizontally-opposed two-cylinder four-cylinder air-cooled engine has over 30 years of development behind it. Its simplicity, radiator, water pump, water hoses, pump, fan belt, vacuum spark advance starter Bendix drive and starter — general bearings) is really significant. These features and the engine's light weight, make maintenance on the BMW much easier than the 850, particularly for do-it-yourself mechanic.

I found the 850 had a top speed of 100 mph, a 0 to 50 time of 18 seconds and it averaged 38 to 42 mpg. The BMW, find, has a top speed of 68; a 0 to 50 time of 24.3 seconds and averages 48 to 52 mpg. The 850's larger engine (3.0 cubic inches vs. 35.7) naturally will outperform the BMW, but the BMW's economy is considerably better. Other noteworthy BMW features include a 100 ft. floor, 28 foot turning circle (29.6 for the 850) and good visibility. In contrast to the 850, the BMW's bumpers are more ample, their only fault being that they make convenient handles for wise guys. The one big sore spot in the BMW picture is the poor parts and service availability in the U.S. This coupled with the controversial front-opening door is probably the reason for the poor sales showing of this extremely well-engineered car has made in the U.S.

J. H. Challacombe  
Anaheim, California

We did run a road test on the BMW 600 in August, 1959, the same month as we viewed the NSU Prinz. Our performance figures differed from yours. We found the BMW 600 to have a top speed of 65 mph, a 0 to 50 time of 19.3 seconds. Our highway driving miles per gallon figure was 46. Your 850 figures tallied with ours but the gas mileage quotation. Our range was 28 to 40 mpg. We would suggest if you have any specific parts and/or service difficulties that you contact the importer directly. It is the Fadex Corp., 487 Park Ave., New York 22, N.Y.

## AFTER YOU, GASTON

A bit late but perhaps still of interest since apparently all reporters missed the facts at the Nassau Trophy Race. In the 48 Gaston Andrey and Phil Hill were battling for second place. They both passed the Aston Martin coupe approaching a corner on the left and Andrey on the right. The Aston swerved to the right, hitting Andrey's Maserati in the rear and causing him to spin off the course with a damaged gas tank and a small fire which he was fortunately able to extinguish. Andrey was not permitted to finish the race, he was awarded an official sixth overall. He gained him the trophy for "Outstanding Performance" at Nassau.

A. Harlow Elms  
Gaston Andrey, Jr.  
Framingham, Mass.

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## IRKED OVER INSURANCE

I read with interest the article by Roger Huntington, "Straight Line Sport" (SCI, June, 1960). I agree with everything he said but want to add what I have learned from three years of quarter-mile drag racing.

I raced an Austin-Healey practically every week at an area drag strip. When I put a Corvette engine in it about a year ago it really started to go. I was still using the car for daily transportation and felt it was a perfect dual-purpose machine.

But the end was nearer than I thought. My insurance company found out the car was being used in weekend drags and a short time later, much to my surprise, I received cancellation notices on all my auto insurance policies — not just on the Healey. The company would not send me a written report on why they cancelled, but would only discuss it over the phone. Traffic accidents and traffic citations were not the reasons but two other things were mentioned. The first was that I was a member of a sports car club (which is not true) and the second was that the car participated in drag racing.

I have not been able to get insurance for the Healey or any other car. I have been turned down by at least a dozen companies. Drag racing and sports car clubs are great, but never let your insurance company know you associate with either.

Ron Miller  
Los Angeles, Calif.

Mr. Miller's comments are representative of several letters we have received on the question of insurance for sports cars. It would seem there is a need for better definition of what a company will consider "racing", for example. Some readers have racing exclusion clauses written into their policies and have wondered if this includes such practices as rallying. Others have complained that their regular policies have been cancelled for weekend racing activities although they were covered during the events by special policies. With the matter of insurance questions left largely up to individual states and companies, we can offer no pat answers. However, we must disagree with Mr. Miller's suggestion that you not mention racing to your insurance company. The best advice we can offer is that you try to get all the facts about your policy before you race; get clear-cut legal definitions of any terms that are hazy to you, and above all, be sure you are covered and that any "racing" activities will not jeopardize your regular coverage or insurability.

A bright spot on the insurance horizon, however, is the word from the State Farm Mutual Automobile Insurance Company, Bloomington, Illinois, that as a result of a recent reversal of policy it will "favorably consider accepting" drivers over 25 who participate in rallies and gymkhanas. They stipulate the events be sponsored and supervised by a "recognized sports car club which is associated with the Sports Car Club of America or a club whose activities parallel that organization." There is nevertheless a condition on the policies that there is no coverage in "any pre-arranged race of speed contest," but rallies and gymkhanas are no longer considered "races or speed contests" by the company.

# SING A SONG OF SPORTS CARS

THE ROMANTICS OF SPORTS CAR SEMANTICS SERENADE TO SEBRING THE SCCA MARCHING SONG

THE TALE OF PIERRE LEVEGH

THE RACER LIVES FOREVER

SWINGING AT THE NURBURGRING

A RACING MAN WHO LOVES HIS CAR

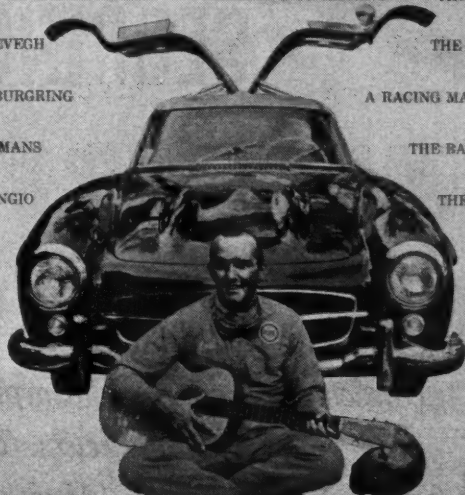
THE COUNTDOWN AT LeMANS

THE BALLAD OF FON PORTAGO

THE TRUTH IS WITH FANGIO

THE BUGATTI BLUE WALTZ

CASTOR OIL CANTATA



## SUNG BY PAUL O'SHEA

We have long felt that since sports car racing has become such an important part of our national heritage, that its heroes and its legends should be immortalized in song. Consistent with Riverside's dynamic policies of authenticity in the field of high fidelity recording, we commissioned champion driver, Paul O'Shea, to record for posterity these completely outrageous racing ballads. Remember Ustinov?

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# SEBRING STORY— SPARK PLUG STYLE

*At Sebring, the outstanding spark plug was  
Champion. In the 3 races, 10 out of the 14  
classes were won by Champion-sparked*

*cars. The "birdcage"*

*Maserati that set a new lap*

*record—and the OSCA*

*that won "Index of*

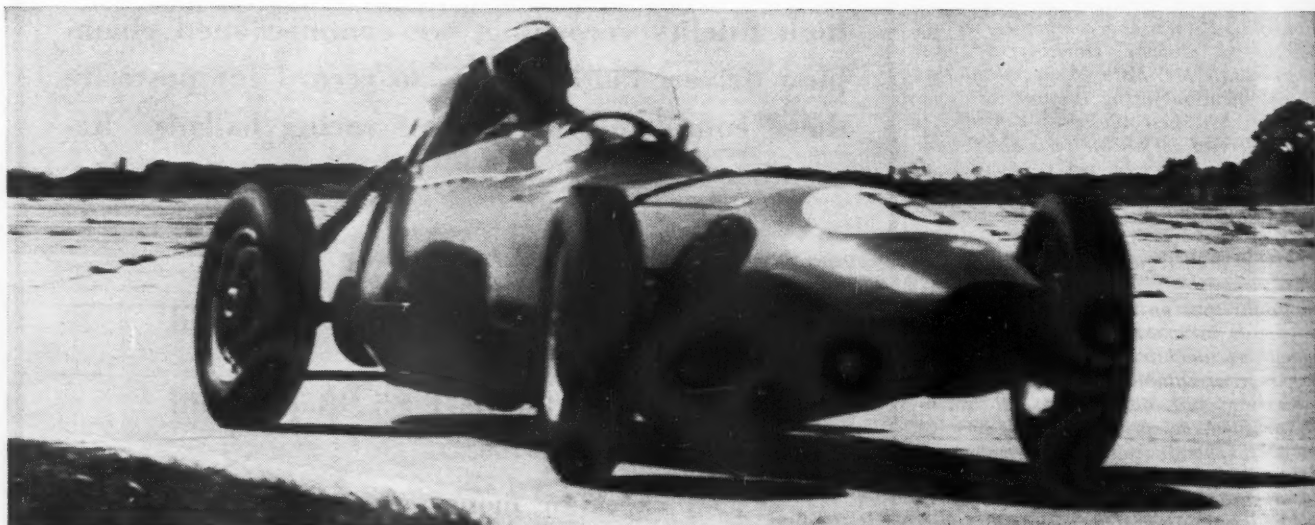
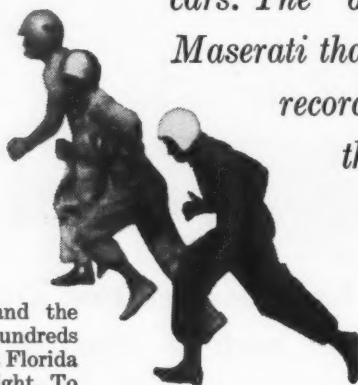
*Performance" in the 12-hour go*

*—were also running Champion*

*spark plugs. Here's the story of*

*Champion at Sebring . . .*

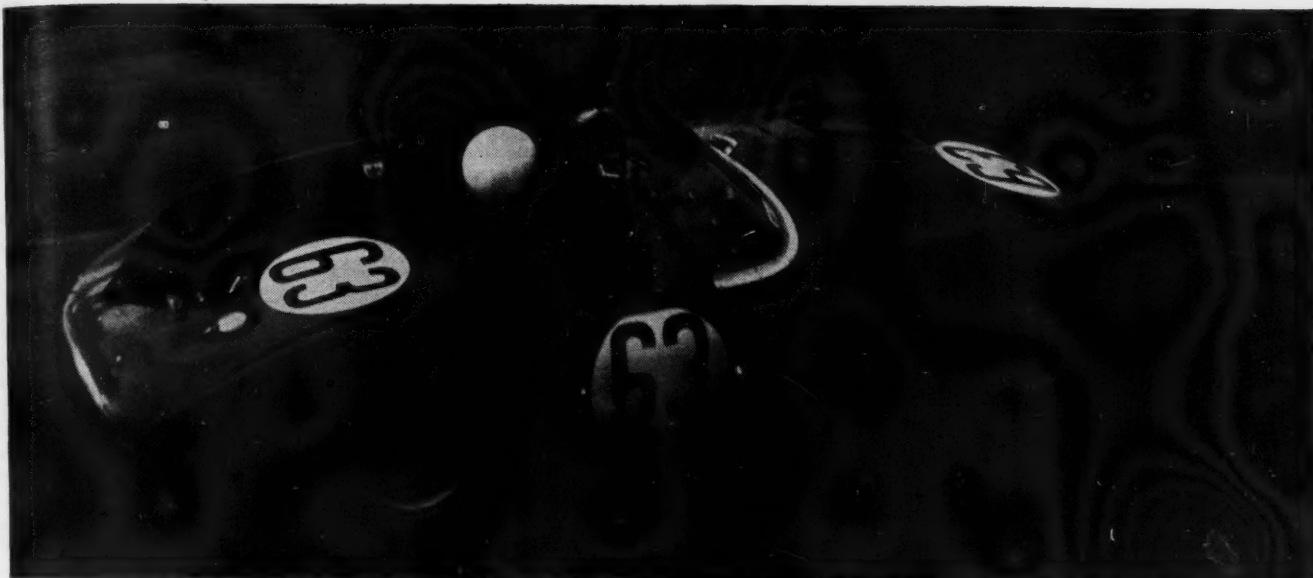
**SIXTY-FIVE DRIVERS DASH** for their cars—and the 12-hour Sebring classic is on! They cover hundreds of miles as they speed through the long, hot Florida day . . . deep into the welcome cool of night. To spark the power for this grueling Grand Prix of Endurance, 41 cars (fourteen different makes) used Champion spark plugs.



**FORMULA JUNIOR WINNER JIM HALL** whips his Elva through a turn in a special 66-mile race for Formula Junior cars held the day before the 12-hour contest. (Formula Junior cars bear roughly the same relation to Grand Prix cars that dirt-track "midgets" have to Indianapolis

cars.) Powered by a 3-cylinder, 2-stroke DKW engine equipped with Champion J-61R plugs, Hall ran the 30 laps over the specially shortened 2.2-mile at an average of 88 mph. Said Hall, "My Champions didn't misfire once the whole race."

**CHAMPION SPARK PLUG COMPANY**

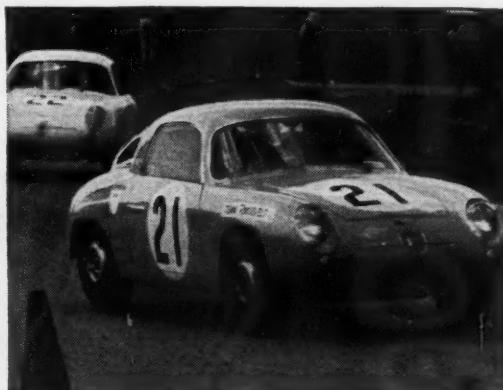


**THROUGH THE HAZARDOUS HAIRPIN TURN** goes John Bentley in the Champion-sparked OSCA that won the coveted "Index of Performance" (awarded to the car that covers the greatest distance in relation to displacement). With the smallest engine (only 746 cc.) of all cars entered in

the 12-hour race, the OSCA placed 12th over-all among the 41 finishers—actually beating cars with engines over *six times* its size! Said Bentley, "We wound the engine up rather tight, and the Champions never missed a beat or gave the slightest trouble."



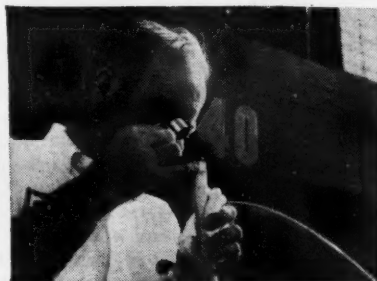
**A NEW SEBRING RECORD** for fastest lap was set by this Champion-equipped "birdcage" Maserati entered by Camoradi U.S.A. It covered the twisting, turning 5.2-mile course at 94.996 mph, was about 30 miles ahead of the pack when rear end trouble forced it out after more than 8 hours. Here co-driver Dan Gurney takes the Maser through the Webster turns—a 90° right quickly followed by a 90° left.



**A HOT CONTEST** for lead in the 4-hour race for small Grand Touring cars (under 1000 cc.) took place between these two Champion-equipped Fiat-Abarths entered by Team Roosevelt. At race end, car No. 22, driven by Paul Richards, was over-all winner. The other two class winners, a Sprite and a Fiat, also used Champion spark plugs.



**FAST PIT WORK** by the Camoradi U.S.A. team pays off for this Champion-sparked Porsche, which won its class in the 12-hour Grand Prix of Endurance. Besides this Porsche, other class winners running Champion spark plugs were a Ferrari, a Corvette, a Sprite, an OSCA, and a Lola. It's further proof that every engine does its best with Champions.



**SPARK PLUG CHECKS** were much in demand the days before the race. Here Champion's Head Racing Engineer, Don Garner, checks plugs on a car that has just finished a practice run. Spark plug firing ends are good indicators of what is going on inside an engine, play a big part in proper tuning for competition.



DEPENDABLE

**CHAMPION**

SPARK PLUGS

TOLEDO 1, OHIO



# DETROIT NEWSLETTER

by Mike Davis

It's getting close to new-model time in Detroit. Practically all 1961 models will bow simultaneously in early October at the National Auto Show in the Motor City's sparkling new Convention Hall.

This year, like last, the big interest is in four new Detroit compacts, from Buick, Oldsmobile, Pontiac and Dodge. In addition somewhat smaller, but hardly compact, models will be offered in the Lincoln and Cadillac lineups.

Principal engineering breakthroughs for the 1961 models are liquid-cooled aluminum engines, the first transaxle with front engine, and for the first time since the early 1930s a four-cylinder power plant from one of the Big Three.

Styling concentrates on filing down fins, eliminating dog-legs, sculpturing sides and simplifying trim. One maker has nostalgically turned to the classic cars of yesteryear for its theme.

Here is a company-by-company roundup of early-Summer information on the '61s:

## FORD MOTOR COMPANY

Ford had its big year in 1960 with an "all-new" Ford and two compacts. This fall you'll see a lot of hoopla but not much new product except in the luxury class.

Biggest face lift will be the standard Ford, which will have extensive sheet metal changes to tone down the Chevy-like fins, restore the bulls-eye taillights, give the front fenders a broader appearance and offer a new grille with the headlights toward the outside.

While there's been a lot of noise about Ford's plans for a "compact compact"—such as we described in the February SCI—at the beginning of the summer no decision to go ahead with such a Volkswagen-sized car had been made. This means it couldn't be introduced before late 1961 at the earliest. Blueprints on the four-cylinder block (which has the same bore and stroke as the Falcon) are made up in both the metric system and inches, indicating it might be produced either in the U.S. or Germany.

Another model Ford that engineers are diddling with—though there is no indication it will be introduced this fall—is halfway between the compacts and the Ford Fairlane in size: 3000 pounds and about a 116-inch wheelbase, similar to the Custom series discontinued a couple of years back.

Both the Falcon and the Comet are due for a minor lift. We have heard the Falcon may again offer the performance option, though it is considered unlikely. Comet, however, will go to a larger engine derived by lengthening the stroke. The result would be 170 cubic inches and roughly 110 horsepower.

The "Big M" Mercury will be no more

after this model year; for '61, Mercury drops the Park Lane series and adopts the Ford body shell. Mercury will carry its roomy front seat with it, however. And some mechanical developments such as a central hydraulic system and lubrication-less bearings may show up. Wheelbase will drop from 126 inches to about 122.

Tied in with the smaller Mercury is the Thunderbird-Continental mating. Like the still popular two-place, the four-place T-Bird is being supplanted by a six-passenger four-door model, somewhat longer and sharing its body with a new "compact" Continental (January Newsletter). The Continental has styling reminiscent of the 1956 Mark II, and will be a little longer than the new T-Bird, though shorter than this year's Mercury. Both will have a



SCI's Editor snapped this 1961 model on his recent Detroit trip. Configuration suggests strongly what Ford Motor Co. is planning in new models.



Chrysler-type stub-frame unit body. A four-door convertible may be offered.

Lincoln reportedly will eliminate the Premier series as part of this product and marketing switch.

## GENERAL MOTORS CORPORATION

All GM's full-sized cars will eliminate the dog-leg in the windshield, as demonstrated in the 1960 Cadillac Eldorado Brougham. Crisper roof styling is also expected to yield a bit more headroom or better seating.

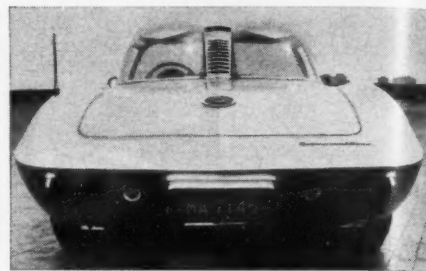
There will be little sheet metal change in the side panels of the GM cars, but front and rear ends will get some attention. The sterns will emphasize a belt-line with a cut-back underneath, like the Corvair.

Inside, the biggest automaker will reduce dog houses (front humps) by redesigning transmissions in at least four of the five divisions. Other lines are expected to follow Buick's lead in 1960 by lowering floor pans slightly for better leg comfort.

Corvair will offer the four-speed gear box, plus station wagon and small truck models. There may be some alterations to provide more luggage space, and new sheet metal to conform with GM's long-established obsolescence practice.

We know you'd like to hear all about a new Corvette . . . and if we knew anything

we'd tell you. But so far, not a word. Chevrolet has lived with essentially the same car since 1954, and there seems to be no reason for a divorce now.



'61 Corvette stern likely to resemble that of XP 700 shown. Note vent, high mirror placement.

Cadillac supposedly will offer a 123-inch wheelbase model based on the Buick-Oldsmobile-Pontiac body shell (it used to be called the "B" body), representing a return to the old Model 61. This car is designed to compete with Thunderbird, Mercedes-Benz 220 S and the Chrysler New Yorker.

Pontiac's new compact—variously called Panther, Tempest and X-100—is undoubtedly the most interesting of the 1961 cars. It will have a 45-degree slanted, four-cylinder in-line overhead-valve power plant—a "half-eight" of about 125 horsepower and 195 cubic inches which will be machined on the same production tools as Pontiac's V8s. Transmission will be the Corvair Powerglide transaxle with the torque converter transposed. Suspension, therefore, will be four-wheel independent, also like the Corvair.

Pontiac executives reportedly were reluctant to get into a small car program, and the Panther-Tempest-or-whatever (and names can be changed up to the last minute) has been brought out with a minimum of cost. Price will be low, styling is said to be sporty—perhaps bucket seats—and we'll bet Pontiac has another winner from general manager Bunky Knudsen.

Buick and Oldsmobile Division compacts are fraternal twins, with a water-cooled aluminum V8 of about 215 cubic inches and 140 horsepower. (Pontiac's compact may offer this engine as an option.) Wheelbase is 112 inches, overall length just under 200 inches. Buick's will be called the Invader, and Olds christened theirs F-85.

Numerous Corvair inner body panels and hardware parts are used in the new GM compacts, but bodies will differ in having a "fast-back" greenhouse and rear quarter windows. Grilles and trim will show kinship to the parent divisional brands. All three compacts will be offered in four-door sedans and four-door wagons; one or all may have extruded aluminum bumpers.

## CHRYSLER CORPORATION

Like Ford, Chrysler gave its "all" in the 1960 model year. The new compact Dodge Lancer model will carry the ball in October for the third largest automaker.

Security on the Lancer project has been good, perhaps because it is similar to the Valiant and thus no major new tooling contracts have had to be released for the car. The Lancer will probably have a slightly more powerful version of the Valiant engine, with an aluminum block.

Sheet metal will be substantially different, to give it a family resemblance to the Dart. There is conflicting opinion as to whether the wheelbase will be 106.5 inches like the Valiant or about 114 inches. Nevertheless, the Lancer will be slightly more deluxe than the Valiant and priced higher. Dodge-Dart-Simca dealers will handle it.

The Valiant is in for a new grille, changed taillights, more attractive interior styling. A convertible may be offered later in the model year. Some reports have it that the phony square wheel cover in the rear deck will be eliminated, but we feel this is more likely to be the Lancer deck. Valiant, too, should have an aluminum block ready.

In general, the full-sized Chrysler cars will undergo a typical face lift. Biggest changes will be the Plymouth and Imperial. Imperial stylists have been studying the classic cars of 25 years ago, have come up with some fascinating adaptations. The Plymouth reportedly will have a center deck single fin as an option—like the Bat Man's car, if you used to read comic books, or the Auburn Speedster if you didn't. Other fins will be shaved down, stretched out horizontally.

There's reason to think Chrysler may discard its controversial swivel seats in favor of individually-adjustable, even reclining seats of the bucket variety.

And it's fairly certain the entire line-up will adopt the revolutionary alternating current generator (alternator) introduced this year on the Valiant. The alternator, you know, is the key to the electronic car in the future, and to such advances as a transistorized ignition system even sooner.

Both Dodge and DeSoto, and perhaps Chrysler as well, will reduce the number of series being offered.

#### STUDEBAKER-PACKARD CORPORATION

Away from the Detroit scene, little information about forthcoming Lark plans has leaked from South Bend. Some six-cylinder engine alterations are known to be underway—valve train and camshaft—which might even mean an overhead-valve version of the old L-head six.

S-P has been lining up overseas deals which involve installation of basic manufacturing facilities, and this could well be the method by which existing engine equipment will be utilized if a new engine is introduced this fall. Engineers in South Bend are also working at improving the Borg-Warner-type automatic transmission used in Larks. And a new grille is scheduled.

Greater emphasis is expected to be placed on the sporty Hawk model, which remains unique among U.S. cars as a five-passenger sport coupe.

#### AMERICAN MOTORS CORPORATION

George Romney is trim and healthy and so is his company. AMC has a new, long-stroke in-line overhead-valve six-cylinder power plant ready for 1961. It will have an aluminum block if all the bugs are killed in time.

The Rambler and Ambassador series are in for a face-lifting, and the 100-inch-wheelbase American gets a new grille and convertible this year. Otherwise, AMC will remain true to its promise of quality, economy and little change.

—MD

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Jack Brabham leads in 1959 Dutch Grand Prix

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Earl's Court Automobile Show — London 1959

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# EUROPEAN NEWSLETTER

## BMW BOOM SEEN

Modernization and expansion of BMW auto-producing facilities are expected to result from the financial rescue of the firm by the Augsburg-Nuremberg Engine Co. (MAN). MAN was successful in edging out both General Electric and Daimler-Benz in a rush to save the old firm and concurrently get a dominant place in reviving the West German aircraft engine industry. The BMW subsidiary, BMW-Treibwerk, is earmarked for a \$100 million contract to build engines for the West German Air Force's F-104 Starfighter. MAN has offered to buy a 50 percent interest in the subsidiary for \$4,050,000 and to grant BMW a ten-year loan of \$4,750,000. BMW is expected to cut the interest of existing shareholders and to issue additional stock. Daimler-Benz had made a bid that would have turned the old Bavarian company into a subsidiary. Both GE and MAN were said to be more interested in the aircraft engine work than car manufacture, but injection of new capital is expected to revitalize BMW's auto-making schedule.

## PROSPERITY AT CLIMAX

Nothing to do with cars, but Coventry Climax is now building some of the most successful fork-lift trucks in the business. Ford at Dagenham has stated quite unequivocally that Climax has, in its opinion, produced the best truck of any it has tested from a world-wide selection, a statement it has backed with large and solid orders. This is the Company's bread and butter, moreso than the firepumps from which the racing engine was derived.

Nevertheless the racing engines, whose continued development was a product of Chairman Leonard Lee's enthusiasm, are now adding a little jam to the diet. Colin Chapman is now taking an increasing number of the single-cam 1220 cc units for his Elites, and at the recent Land's End Trial we saw three factory Morgans fitted with this unit. Presumably Peter Morgan is considering an alternative to the Ford unit. Climax engines in Morgans would renew an old association, for the original 4-4 Morgan, it will be recalled, used the prewar, intake-over-exhaust Climax engine.

In the racing shop lots of interesting things are going on, aside from the regular servicing of John Cooper's, Colin Chapman's and Rob Walker's racing units: the engines are returned to the factory after every race! Development work is going on with two 1961 Formula 1 engines. Peter Windsor-Smith is also developing a very pretty twin-cam head for the 750 cc unit derived from their outboard engine, intended for a Le Mans car. This outboard engine of Climax's seems doomed never to go into production. Development work and styling have been completed for some time and a great deal of testing tried out on the south coast with a 20-foot speed cruiser hull.

## JAG—DAIMLER PLANS

Daimler, absorbed by its Coventry neighbor, Jaguar, will be continued as a separate entity, according to Sir William Lyons, chairman and managing director of Jaguar, but watch for "some integration" in the future. He said, however, when questioned by SCI at the British Exhibition at New York's Coliseum, that Daimler as Daimler will be continued "indefinitely." We pressed further on the integration point but apparently the appearance of a V8 Jag or an XK-engined SP250 is not immediately likely.

According to Sir William, Jaguar's immediate goal is to meet its production target figures. Even this year, when the 10,000-car goal was slashed to 7,500, appears bleak from a production standpoint. The main reason for the dearth of Jaguars, he said, is lack of manufacturing space. Through acquisition of the one and a quarter million square foot Daimler facilities, Jaguar hopes that by Christmas production will be up 25 percent.

Jaguar, happy in its Coventry location, found the Daimler acquisition a neat solution to its desire for more manufacturing space. Planning officials, in attempts to decentralize industry, (May '60, European Newsletter) have forbidden erection of more factories in the metropolitan Coventry area. For BSA (British Small Arms, owners of Daimler) the move was also advantageous since it will enable it to pursue its desire for more general engineering work. Stepped-up Daimler production and marketing are expected to be further byproducts of the change.

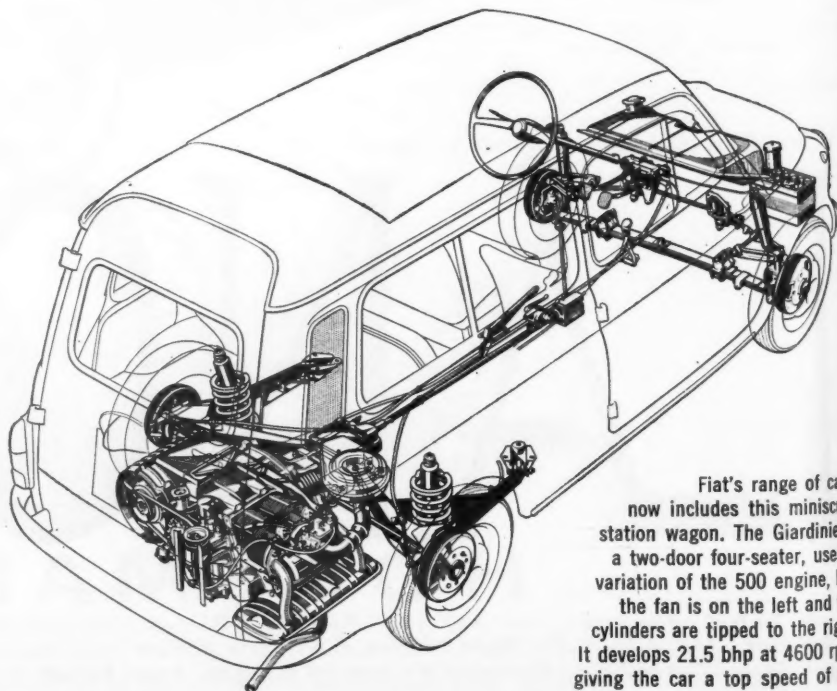
Sir William acknowledged a shift in emphasis in Jaguar sales from sports to touring sedan models. He spoke warmly of the 3.8, a big seller here, but dropped broad hints a new sports model may not be too far off. He conceded there was "a tremendous market" for a new sports type and indicated it may be along the lines of the XKSS. He said it would probably resemble the Le Mans Jaguar, which the firm has bent over backward to stress was

made expressly for Briggs Cunningham. He said, too, construction of the Cunningham Jag should not be considered indicative of any company plans to return to racing, merely that the racing research division is keeping up with late competition developments so that should the competition (Mercedes?) make a race bid, the Coventry outfit would not have to launch a crash program.

The managing director did not appear alarmed by the presence of American compact cars on the sales battle lines. He indicated, and probably rightly so, that the American Jaguar market may at least be expected to remain fairly constant while new sales vistas are opening up, for example, in Australia. It appeared in our conversation with him that about the only thing that worries Jaguar about its American sales at this time is finding enough cars to keep the customers from walking away empty-handed!

## HOT RUMOR DEPARTMENT

The perennial rumor—that Bugatti is readying a "comeback"—has cropped up again. The latest version is that there has been extensive testing—at night on Alsatian back roads—of a 1500 cc two-place roadster. Reportedly, there had been hopes of having a car ready for Le Mans. The 1.5-liter four-cylinder engine has dual overhead cams, dual ignition and two twin-throat side-draft carburetors. It's said to develop about 100 bhp. It is alleged to be mounted in a light-alloy tubular chassis with disc brakes and a suspension possibly modeled after the 1955 F. 1 Bug. An artist's rendering of the car shows it to have right-hand drive and a body looking somewhat like a flattened Alfa. The Bugatti horseshoe grill is retained but two horizontal bars extend from it to parking lights in the Alfa style. Bugatti is said to be on firmer financial ground, thanks to a tie-up with an American helicopter manufacturer for whom it makes rotor blades, and SCI can at least confirm the existence of cylinder head castings and other parts for the rumored 1500. S.C.I.



Fiat's range of cars now includes this miniscule station wagon. The Giardiniera, a two-door four-seater, uses a variation of the 500 engine, but the fan is on the left and the cylinders are tipped to the right. It develops 21.5 bhp at 4600 rpm, giving the car a top speed of 60.

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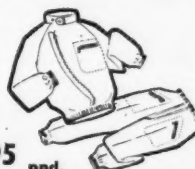
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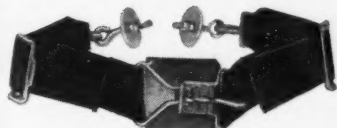
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Helmet with visor, **\$38.50** ppd., less visor **\$37.00** ppd.

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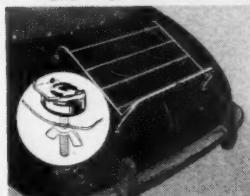
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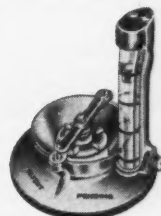
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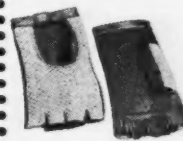


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# PEUGEOT'S NEW 404

by Hans Patleich

A new fine car produced by France's oldest company.

► Peugeot is one of the few factories where a new car can be concealed from the motoring press right up to the moment when the first units come clanking off the assembly line. For a year now there have been rumors of a Peugeot 103—supposedly with an 1100 cc engine. This small car was actually a smoke screen meant to conceal development of a new and more powerful Peugeot—the 404.

Introduction of the 404 demonstrates Peugeot prudence on two counts. First, by failing to squelch the rumor of a smaller car they caught the sages and the public by surprise, good sales strategy and a rarity in this day and age when almost everybody knows almost everything about new models. Secondly, and more important, the 404 gives Peugeot a really full line of cars. The 404 is aimed at those 403 owners who want more go, but insist that it be Peugeot-type go.

Full and complete employment is a responsibility most French manufacturers take very seriously and Roland Peugeot, whose name made the world's headlines a few months ago when his son was kidnapped, is no exception. He has outlined his company's concern for the 35,000 people who work at Peugeot and has said the 404 will supplement, not replace, the 403. The 403 will continue to account for 80 percent of the manufacturing program. By the end of the year the company hopes to be producing 100 Type 404s and 250 Type 403s every day.

From a technical standpoint the 404 is quite interesting. The engine, though descended from the 403's power plant, is a complete redesign. As in the Mercedes 300 SL and Chrysler Valiant the engine is canted over, at 45 degrees in this case. Its positioning in the car is similar to the Valiant installation—with the crankcase on the left side of the car. The oil pan and crankcase have naturally been designed to accommodate this asymmetrical arrangement. Several advantages are gained by this sloped power plant. Besides lowering both the center of gravity and the hoodline, the tilted engine makes access easier to accessories such as the starter, generator, coil, fuel pump and distributor. These were things a little difficult to get at on the upright 403

engine. With a 2.874-inch bore and 2.37-inch stroke the new 404 is a real short-stroke unit. Displacement is 1680 cc, compression ratio 7.2 to 1 and power, 74 bhp at 5400 rpm. Low compression permits use of regular gas, a feature more important in France than in the U.S. Peak torque (94 lb-ft) comes in at 2250 rpm, and stays near this figure all the way from 1500 to 3500 rpm. The torque is so good, and spread so widely through the rev range, that you can actually feel the difference when driving the car. Also new on this engine is an automatic Renold chain tensioner with pressure lubrication. Valves are set at an angle of 25 degrees to each other, and are placed in combustion chambers that are offset to one side of the cylinder bore. They are partially spherical in shape. Another novelty is the exhaust gas collector adjacent to the cylinder head.

The 403 transmission was good but the one that replaces it in the 404 is even better. The gear ratios are different—with the overdrive on top gear being eliminated. The various ratios seem to be better matched to the torque curve than on the 403. Redesign of the column-mounted shift has resulted in a more compact pattern that requires less effort to operate. All four gears retain full synchronization.

Unitized chassis-body construction is used. A new front wheel suspension system is attached to this very rigid structure. It is the McPherson strut type which allows—through use of a combined telescopic shock absorber and coil spring—a much longer travel that absorbs all sorts of irregularities in the road surface at varying speeds. Braking reactions are taken through diagonal radius rods attached to the chassis through rubber bushings. Rear wheel suspension hasn't been changed. Springing is by coils, with radius rods transmitting braking and drive reactions to the chassis, while a Panhard rod gives lateral guidance.

The ratio of the rack and pinion steering has been lowered so that less force is needed at the wheel rim. The turning circle still remains amazingly small for a car of this type, and with the 404's more compact external shape will make the car a joy in traffic.

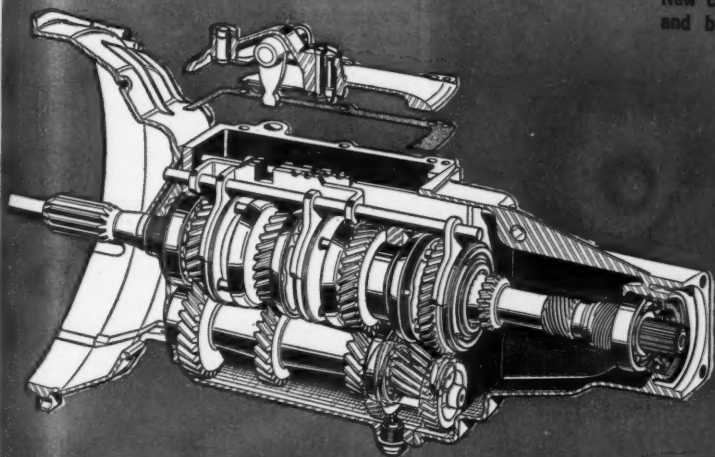
The 404 has a body style (as does the 403) that should age gracefully. Both were done by Pinin Farina, and both will undoubtedly become classics in the years to come. Body work is of a high order of quality, and special mention should be made of the silent door latches. These are a new Wilmot-Breeden Zero-Torque type that shut noiselessly, and as their name implies with very little effort.

The 404 interior is quite a bit different from that of the 403. One thing that is retained is the air of utter good taste. The separate front seats are adjustable, and thickly upholstered much like those in the big Citroën. The heating and ventilation layout is completely new. Fresh air is taken in through a flush grille set just in front of the windshield. The air enters the car through large louvered ducts set on either side of the dashboard. Small levers control the amount and direction of the incoming air.

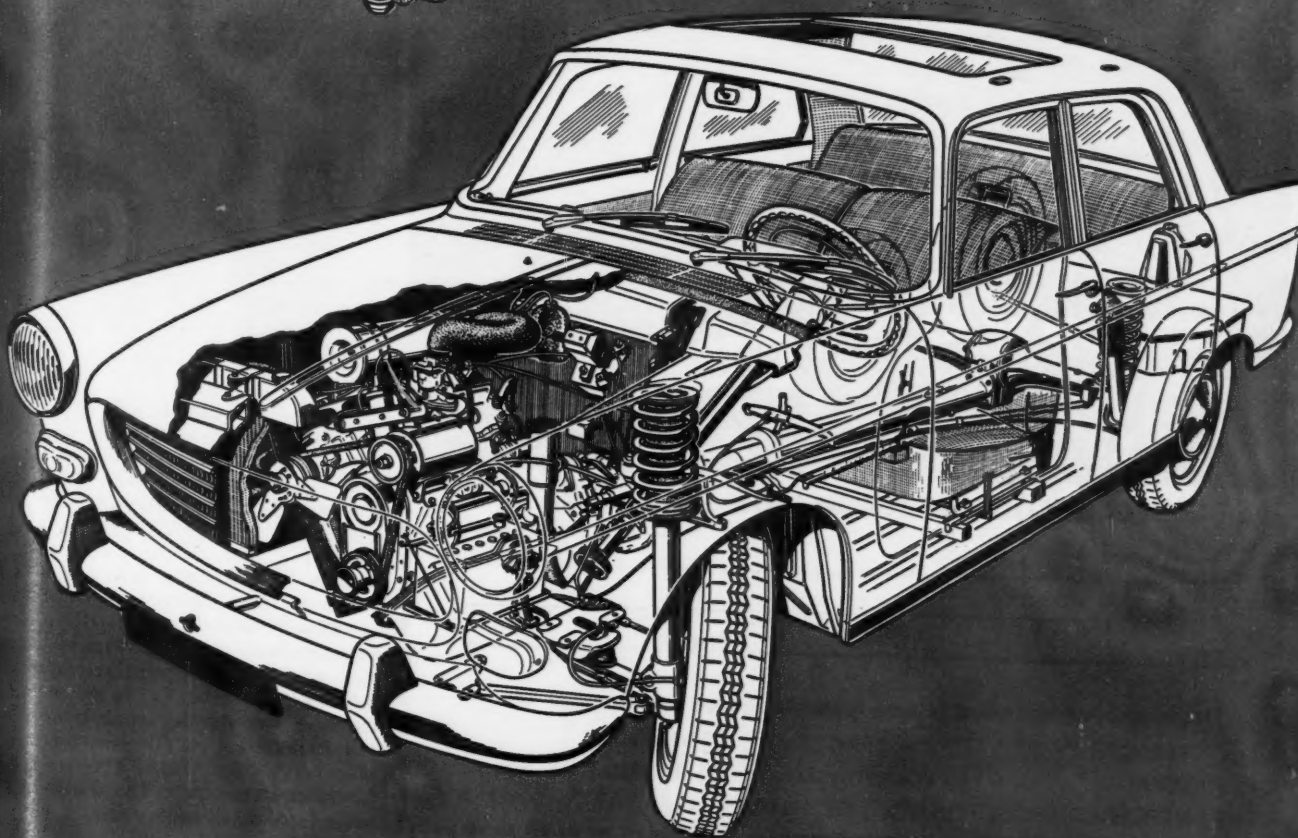
The first impression a driver gets in a 404 is the lack of engine noise. Even at 100 mph on the Paris expressway only wind noise could be heard. Driving comfort and ride are of a very high order with deep bumps and wavy asphalt surfaces being masked from the occupants. In corners, the 404 exhibited almost neutral steering characteristics, and on bumpy turns the solid back axle behaved itself remarkably well. The brakes are powerful, requiring little pedal pressure, and are progressive in action. A rough check from zero to 60 mph on an uncorrected speedometer showed 18.5 seconds on the watch. This was obtained by taking the engine up to 6000 rpm in the lower gears. Such heavy-footedness was not required to keep up with the normal flow of traffic, however. All in all the 404 looks like a logical stablemate for the well-proven 403 model. The latest member of the Peugeot family is slated for a debut in this country sometime in 1961.



Rear-quarter view of the Peugeot 404 shows fine-lined Farina styling. New car achieves the seemingly impossible: it is smaller on the outside and bigger on the inside than its older companion the reliable 403.



Cutaways clearly show canted engine, direct-drive fourth in new gearbox, and combined strut and coil spring front end.





# SUPERCHARGE *with* JUDSON



“it’s  
amazing”  
SAY OWNERS

- FOR REAL SPORTS CAR PERFORMANCE
- FOR AMAZING ACCELERATION
- FOR SURGING PASSING ABILITY
- FOR A HIGHER CRUISING SPEED

Only with supercharging do you get such a “snap” in accelerating. Only with a supercharger do you get that feeling of flexibility and absolute control. It gives you rocket performance, a new thrill in motoring pleasure.

Only Judson furnishes a complete bolt-on supercharger kit designed for a specific engine. The controlled low pressure and automatic feature provides dependable supercharged performance without affecting engine reliability.

**JUDSON**  
RESEARCH AND MFG. CO.  
CONSHOHOCKEN, PA.

**SUPERCHARGED**

by JUDSON



## MAIL COUPON TODAY FOR LITERATURE

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_

Please rush literature and data on following Judson Supercharger kit:

- |  |                                     |   |
|--|-------------------------------------|---|
| <input type="checkbox"/> TRIUMPH TR-3    | <input type="checkbox"/> A-H SPRITE | <input type="checkbox"/> VW-GHIA          |
| <input type="checkbox"/> MG-A            | <input type="checkbox"/> VOLKSWAGEN | <input type="checkbox"/> RENAULT DAUPHINE |
| <input type="checkbox"/> MERCEDES 190 SL |                                     |   |

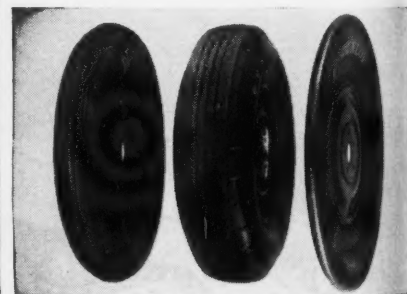
## PIPELINE

### ARE DRIVERS OBSOLESCENT?

We note with mixed emotions a statement by AAA president Frederick T. McGuire that “In the next 20 years, the problem of driving an automobile will become a comparative snap . . . collisions between cars will largely become a thing of the past. This is no pipe dream; it is only a matter of time and money.”

Mr. McGuire was quoted in the fourth annual Auto Review of the New York Post. While we wouldn't be so callous as to be on record favoring highway fatalities and lesser collisions, the means to avoiding them, as suggested by Mr. McGuire, will probably rub a great many driving enthusiasts the wrong way. It is expected that within the next two to five years “a host of ingenious gadgets aimed at helping the driver to make safe decisions” will be introduced. Mr. McGuire, in a nationwide survey for an article entitled “The Millennium for Motorists,” found work is far advanced on development of automatic driving systems to steer and regulate speed. Another system is expected to warn the driver of impending danger and take over if the driver fails to take appropriate action.

These, the Post said, would be an intermediate stage between present methods and fully automatic driving of the future. While the devices would be more than justified if they saved only one life, we would mourn the passing of driver responsibility to an anonymous black box. To us a more happy solution to the staggering highway fatality toll would be stricter enforcement of realistic traffic laws, a tightening up of rules relating to inspections of equipment, improved highways and last but by no means least—teach people how to drive.

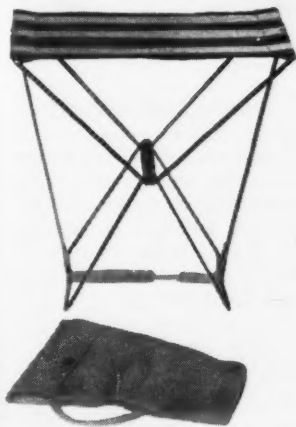


### SPACE TO SPARE

A lightweight, compact spare tire has been announced by the Dunlop Tire and Rubber Corp., Dept. SCI, Buffalo, New York. Known as the Dunlop Standby tire, the unit is less than an inch thick when uninflated, thus adding trunk space. The cost is “substantially less” than a conventional spare. When needed for use, it is inflated with a carbon dioxide bottle supplied with the unit. Dunlop says the tire was designed principally to enable motorists to reach a point where the damaged tire can be repaired or replaced but if necessary can be run for long distances with “only slight difference in performance of the car.” The tire should be a boon to compact car owners.

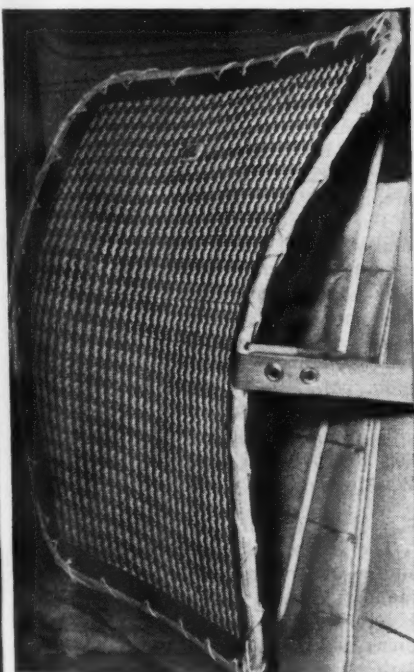
### WATT'S UP?

Tired of playing a guessing game with your car's electrical system? Allied Radio, Dept. SCI, 100 N. Western Ave., Chicago 80, Ill., has a 12-volt ammeter-voltmeter kit. Replacing the red light indicator, it indicates charge-discharge current and battery voltage. The gauges, with easy-to-read white figures, mount on a chrome-plated panel. The unit costs \$10.75.



### SPECTATOR SEAT

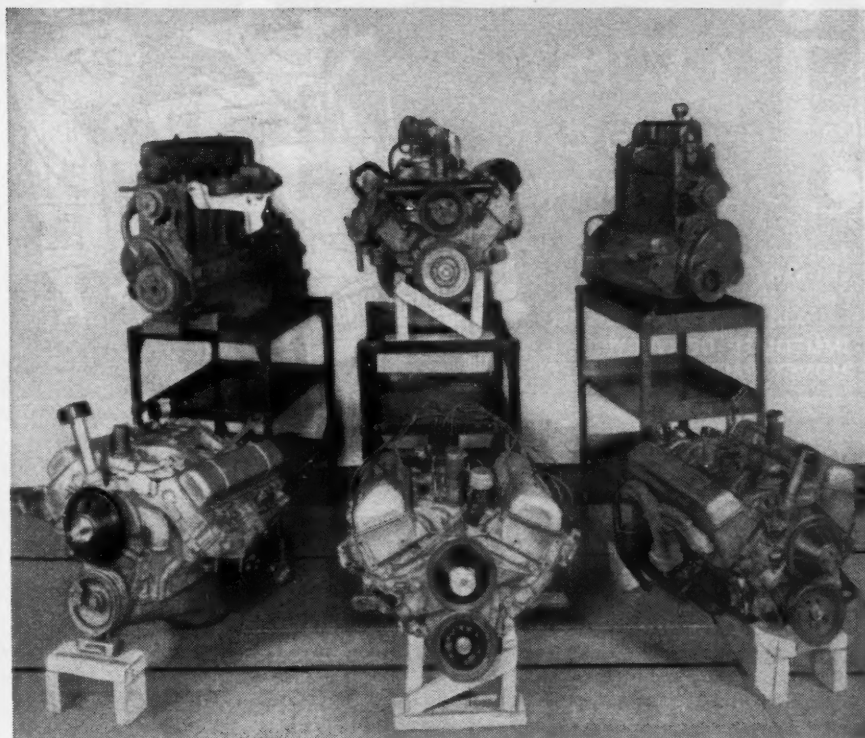
This light-weight colorful spectator seat should be a valuable addition to the gear you bring with you to the races. Small enough to be carried in even the most cramped sports car trunks, it collapses to fit into its neat carrying case. It's available at \$1.95 from The Collector's Case, Dept. SCI, 25 Circle Street, Rumford 16, Rhode Island.



### COOL, MAN, COOL

Driving comfort is offered in the form of steel and resilient woven fabric back rests which permit free air circulation. Available in red, blue, biscuit, green and yellow, they are sold by the Key Leather Co., Ltd., Dept. SCI, 5 Urswick Rd., London, E.9, England under the name of the Sit-Rite Back Rest. The cost, 49 shillings, six pence each. They come for both bench and bucket seats.

(Continued on page 22)



Typical group of various types and makes of engines ready to be mounted on dynamometer stands for testing. Every important make of late model engine, as well as experimental engines of the future, are constantly being tested in Quaker State's Automotive Engine Laboratory.

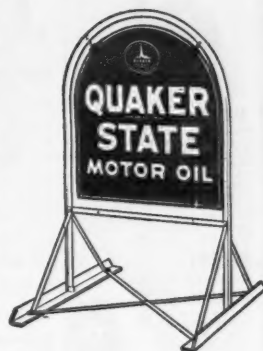
## Quaker State is proved best in the engine lab ...and on the road!

Claims for motor oil quality are easy to make, not so easy to prove. Quaker State quality is proved two ways in *performance tests in engines*—in the lab, and on the road.

At Quaker State's Automotive Laboratory, static engine testing goes on night and day, month after month. On highways, engines undergo the most grueling driving ordeals that can be devised. Quaker State tests passenger car engines, foreign-made engines, racing engines, heavy-duty engines, even experimental engines not yet in production. Data is recorded on factors like engine wear,

engine deposits, motor oil endurance, and gasoline economy, under every condition of load, speed, and temperature.

These tests not only prove Quaker State superiority, they help Quaker State engineers continually improve the product. Years-ahead Quaker State, super-refined from pure Pennsylvania Grade Crude Oil, surpasses the lubrication needs of every car on the road today. It's the finest motor oil your money can buy. Always ask for Quaker State Motor Oil. For name of your nearest dealer, call Western Union by number and ask for Operator 25.



Quaker State's research laboratories have prepared a technical bulletin on British and European sports cars and passenger cars. For free copy send us your name and address and ask for Bulletin P-952B-3.

**QUAKER STATE OIL REFINING CORPORATION, OIL CITY, PA.**  
Member Pennsylvania Grade Crude Oil Association.

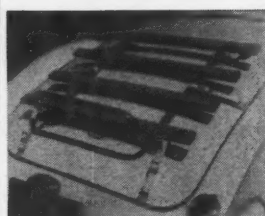


# jay's

## SPORTS CAR ACCESSORIES

featuring the finest in imported and domestic automotive accessories for the foreign and sports car enthusiast.

**IMMEDIATE DELIVERY!**  
**MONEY BACK GUARANTEED!**



### LUGGAGE RACKS FOR THE VAGABOND

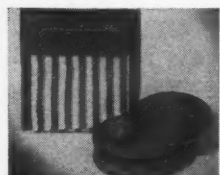
Engineered to sit firmly, securely, on trunk lid assisted by adjustable straps and rubber coated hooks. These removable luggage racks feature

hardwood slats, triple chrome-plated frame. Easy to install, easy to remove. Platform measures 20" x 28" supported by 4 suction cups. For MG-A, TR, A-H Now...\$19.95, Corvette...\$27.50. (Please add \$1 for cover postage.)

**PERMANENT LUGGAGE RACKS**  
Sharp, practical accessory for all sports cars. Measures 20" x 26", heavy gauge triple chrome-plated steel tube frame...\$19.95 (Add \$1 for postage)

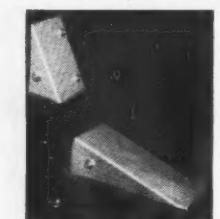
### Jay Exclusive CUSTOM DOOR KNOBS FOR CORVETTES

Add a bit of dash and sparkle to your Corvette with these custom ball door knobs. These deluxe quality, all aluminum knobs are chrome-plated and have threaded insert for easy installation. Replace existing plastic knobs on any Corvette. Only \$3.95 set of 2.



### WAX EXTRAORDINAIRE

Guaranteed Superior! There are car waxes... but none can compare with the superb (oil-free) finish you will get with ONE APPLICATION of Classic Car Wax. This triple action paste wax is GUARANTEED to clean your car; give it a clear, streak-free, hard, deep, jewel-like custom finish in 1/2 the time or YOUR MONEY BACK. PLUS KEEP IT'S SHINY PROTECTIVE FINISH LONGER THAN ANYTHING YOU'VE TRIED. Just rub it on, dust it off. Includes large 1/2 lb. can, applicator cloth, and plastic case. Only \$3.50 complete. Finish Restorer (oil free)...\$2



### MG-A FRAME COVERS

Protect the interior carpeting from excessive wear and tear with these deluxe patterned aluminum frame covers. A most practical, attractive accessory. Easy to install. \$4.95 per set of 4.

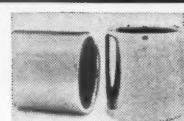
### THRESHOLD PLATES

Attractive, practical! Of patterned aluminum with self tapping screws. Porsche, MGA, TR, Alfa, Sprite \$3.95 set.

### KICK PLATES

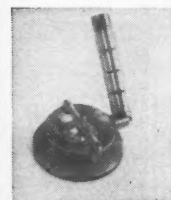
Matching patterned aluminum, prevents scuff and wear. For MG-A, TR, Alfa, Porsche, Speedster, Sprite, Alfa (except coupe) \$3.95

## JAY'S SPECIAL



### CORVETTE EXHAUST TIPS \$2.95

Sparkling chrome accessory of heavy steel. Tips fit tightly inside exhaust pipe, no rattling; prevents blackening of chrome bumpers. (Reg. \$3.95) This month only \$2.95 set.

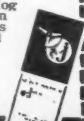


### UNI-SYN

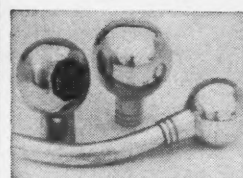
Multiple carburetor synchronizer. For all multiple carbureted imported cars and Corvairs. A mechanic's right arm and home tuner's assurance. \$9.95. Model 4-B for Carter and Rochester dual 4-bore carbs. \$12.50.

### FREE!

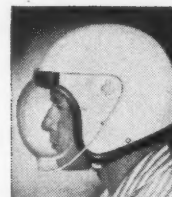
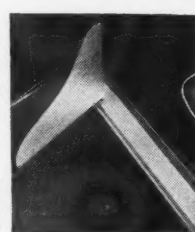
Send for Free illustrated catalog of the latest in accessories from near and far for foreign and American Sports Cars.



## Custom Shift Knobs



Deluxe chrome knobs, sturdy grip (not adaptable for extensions). Threaded to fit most foreign cars, Corvette & T-Bird (specify make) \$3.65, polished aluminum knobs \$2.25. Custom CREST Knobs for MG, TR, Fiat \$2.50. Gearshift extensions for Porsche, VW, Renault, Jag, Corvette \$1.95.



### DELUXE BELL HELMET

S.C.C.A. & Snell Foundation Approved. "500 TX" jet type safety helmet is a must for enthusiasts \$37.00 w/visor \$38.50. Sizes 6 7/8-7 1/2, specify size in ordering Bell TX.

## MAIL COUPON

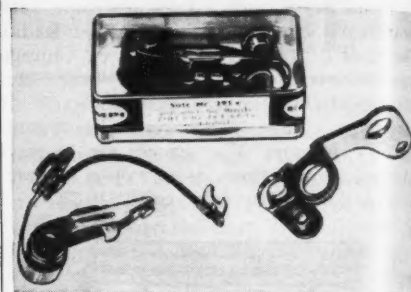
**jay's** SPORTS CAR ACCESSORIES  
6055 1/2 Melrose Ave., Dept. S-9  
Hollywood 38, Calif.

QUANTITY	PRODUCT	COST
.....	Luggage Racks (MG-A, TR, A-H)	\$19.95
.....	Luggage Racks Corvette	27.50
.....	Permanent Luggage Racks	19.95
.....	Corvette Door Knobs (set of 2)	3.95
.....	Classic Car Wax	3.50
.....	MG-A Frame Covers (4)	4.95
.....	Custom Shift Knobs	3.65
.....	Threshold Plates (set)	3.95
.....	Kick Plates	4.95
.....	Corvette Exhaust Tips (Special)	2.95
.....	Uni-Syn	9.95
.....	Uni-Syn 4-bore carb.	12.50
.....	Bell Helmet	37.00
.....	Bell Helmet w/visor	38.50
		<b>TOTAL</b>

Enclosed ..... Cash, ..... Check, ..... Money Order. C.O.D.'s require 1/3 deposit. California res. add 4% state tax. 10-day money back guarantee. Be sure to state size, style, make, and color when applicable. Thank you.

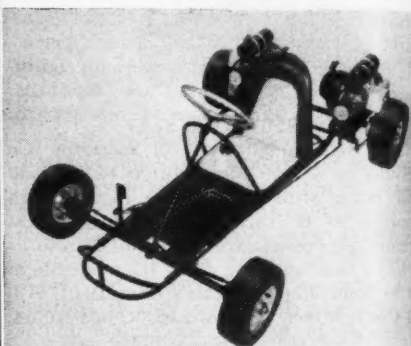
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(Continued from page 21)



### VENTILATED POINTS

Ventilated ignition points to dissipate heat are said to provide prolonged point wear, assure even contact area and give improved performance. Empi Products, Dept. SCI, Box 668, Riverside 4, California, offers them for a variety of cars including 1956 Borgwards, Mercedes 180, 220 and 300, Opels and VWs.



### ONE TO WATCH

Kustom Kart's new "live axle" Mark IV model is expected to better the record of last year's Mark III which was a consistent winner in northwest competition and set three track records in the Seattle-Tacoma area.

The new Kustoms feature dual Comet brakes, dual drive sprockets and motor mounts, Ackerman-corrected steering and ball joint tie rod ends. They are said to have unusual stability built into their 44-inch wheelbase and 34-inch tread and are available with Clinton A490, West Bend, McCulloch, Homelite and Power Products mills. Full information is available from the Angle Lake Cyclery, Dept. SCI 20,840 Pacific Highway South, Seattle, Washington.

### CHECK YOUR OIL

The danger of expensive engine noises and messy fooling around with dip sticks can be avoided by using the Sure Oil Level Gauge. As soon as the ignition is turned on, the oil level is indicated on a dash-mounted gauge.

Available from the Sure Gauge and Lock Co., Dept. SCI, 2329 Trop St., Dayton, Ohio, the gauge is priced at \$19.95. The sending unit requires boring a small hole in the crankcase. The gauge can also be used on automatic transmissions.

### MOTOR SPORTS BOOKLET

A free colorful booklet highlighting 1959 motor sports is available from C. C. Wakefield and Co., Ltd., Dept. SCI, Castrol House, Marylebone Rd., London, N.W. 1.

**jay's** SPORTS CAR ACCESSORIES  
6055 1/2 Melrose Ave., Dept. S-9, Hollywood 38, Calif.  
Phone: Hollywood 2-6905 or visit our showroom.  
DEALER INQUIRIES INVITED

## NEW VOLVOS—PRICES CUT

In a bid to undercut American compact car sales, Volvo has introduced two new models and made price cuts up to \$312. Sharing the same body shell as the hot 85-bhp PV 544 Sports sedan, the Special and Special DeLuxe offer the more quiet and economical 60 bhp version of that sturdy four-cylinder mill, coupled to a three-speed transmission. The Volvo Special, familiar in Sweden, carries a recommended list price of \$1,895, \$100 cheaper than the Special DeLuxe which features luxury interior and appointments, broadened color offerings and a full synchromesh transmission. The two Special series cars will complement the other three Volvo models currently produced. Prices on the four-door 122 S have been cut by about \$312, from \$2807 to approximately \$2495 while the PV 544 has been repriced at \$2195, a reduction of \$147. Nothing firm yet on the 100-bhp P 1800 sports coupe slated for fall sale at about \$3800. The two Special models each include the following as standard equipment: heater-defroster, whitewall tires, bumper guards, wheel rings, and electric windshield wipers.



## ROUGH IT IN STYLE

Heilite Trailers, Inc., Dept. SCI, P. O. Box 480, Lodi, California, has introduced a 310-pound, low-silhouette camping trailer for owners of sports and compact cars.

The two-wheel trailer opens into a camp for a family of five in just one minute. For off-season use, removal of the camp unit converts the trailer into a utility carrier. A brochure listing Heilite's complete line of equipment is available from the manufacturer.

## BUGATTI OWNERS UNITE

Bugatti owners have been invited to investigate membership in the American Bugatti Club, 8724 Garvey Ave., South San Gabriel, California. The club publishes a newsletter with technical information, historical articles and current Bugatti news, in addition to running events.

## CONCOURS SHINE

Life-gets-easier-all-the-time department. Johnson's Wax has announced a new product to wash, clean and polish your chariot in one easy operation. Known as Holiday, no prior washing is needed. Just squirt it on a sponge and wipe off the dried haze. A 15½-ounce bottle costs \$1.95, and should be good for several operations.

## PACIFIC GRAND PRIX

Northern Californians will be treated to a pro-go at Laguna Seca Oct. 22 and 23 when the Sports Car Racing Association of the Monterey Peninsula and the San Francisco Examiner co-host the Pacific Grand Prix. The meeting has FIA sanction. The Ford Ord track is 1.9 miles long.



## KENDALL MOTOR OILS STAY PUT



When the tach needle hovers on the red line, your competition engine needs an oil that won't foam, thin out or give up.

## That's why so many drivers insist on Kendall...

Kendall Motor Oils are specially formulated from the cream of Pennsylvania crude to maintain stable viscosity at high operation and high temperatures. They clean and protect precious engine parts, assure peak engine performance on the track and on the highway.



**KENDALL DUAL ACTION**  
with special detergent additives  
for cleaner engine performance in  
competition, sports and road cars.



**KENDALL NON-DETERGENT**  
recommended for  
all engines whose makers specify  
a detergent-free oil.

*Selected the Official Oils for All Watkins Glen Races*

Ask your favorite dealer for them

KENDALL REFINING COMPANY • BRADFORD, PENNA.





## MINE BUSINESS GROWS OLDER

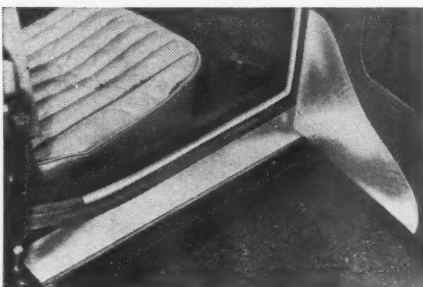
or  
Return to  
Green Street  
by  
Marion Weber

Hi, there! (for the 95th time) Pretty soon we will be observing our 8th anniversary in business. This may not seem like a long time, but when you consider the fact that some owners are still resisting the idea of covering their cars with MG Mittens, it makes you wonder what it takes to get through to these people. We have a message for them: Give Up! Save Your Car Before It Is Too Late. Buy A Mitten.

That's all. Now, here is news about something we can't show a photo of because that would give away the gag. At last, a knowledgeable aficionado has produced a line of greeting cards that the most hip will approve. Using salon-quality European and American automotive photos by Doug Stewart (winner of the Armed Forces Photo Contest in 1958) these EXHAUST NOTES, as they are called, are suitable for nearly any occasion: birthday, anniversary, etc. Practically everyone who sees them in our store takes an assortment. You should do likewise. Price: \$2.50 for 8 different cards. I know you will be ecstatic. Be the first in your group to send EXHAUST NOTES.

### POST PAID

MG Mitten pays postage on all items except very heavy objects such as grille guards and luggage racks and C.O.D. orders.



**THRESHOLD PLATES** of rigidized aluminum are attractive and easy to keep clean in contrast to stock rug or mat. For Porsche, Triumph, Healey and MGA .....\$3.95 pr.  
Sprite threshold plates .....\$3.50 pr.  
**MATCHING SCUFF PLATES** take the brunt of shoe soles, eliminate black marks on panel. For MGA, Porsche, TR, Healey .....\$3.95 pr.  
Sprite scuff pads .....\$3.50  
**PLASTIC DOOR BEADING** is neat. Clear or red .....\$1.25

### INSULATED CARPET

Exact replacement, both sides & tunnel, for MG's, Healey, Sprite, etc. in wool or nylon (specify) but INSULATED to reduce summer heat, winter cold. Tested on Arizona desert. Satisfaction guaranteed or money back. Red & black in stock; send sample for any other color .....\$33.50

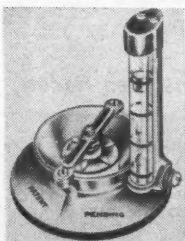
### VACATIONING?

If you haven't taken your annual safari into the hinterlands yet, may we suggest a few absolute indispensables?

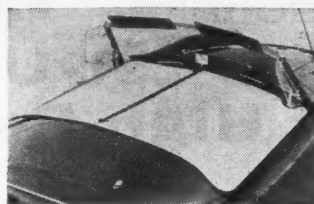
**LUGGAGE RACK** (for sports cars) **ROOF RACK** for sedans. The former, in a typical model will set you back only \$19.95 for a sturdy chrome plated tubular style, permanent or removable. A light aluminum rack, quickly demountable, for VW's is only \$14.95. Other racks for other cars can be found in our FREE CATALOG. Ask for it.

**WINDWINGS** deflect bugs, breezes at high speed. For MGA, other MG's & TR, no tools needed to install .....\$15.95 pr.

**GRILLE GUARD** for MGA .....\$17.95, others \$12.95 and up. See new catalog for details.

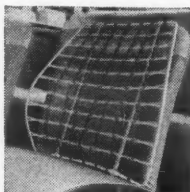


**UNISYN** is not a vacation item, it is a year-round necessity for the enthusiast who prefers to keep his car in tune by his own standards. This vacuum indicator gives a visual reading so that multiple carburetors can be synchronized quite accurately. Full instructions included .....\$9.95



### GENUINE AMCO TONNEAU COVERS

MGA	\$19.95	Healey 100	\$31.95
Sprite	\$19.95	Healey 6 (4)	\$42.95
MG TC TD TF	\$29.95	M.B. 190SL	\$44.95
Jag (120-140)	\$31.95	TR-2	\$44.95
Alfa	\$34.95	Healey 6 (2)	\$39.95
Porsche	\$34.95	TR-3	\$31.95
		Colors: Black, white, Tan.	



**REPLICASE** folds your keys inside a soft leather sheath surmounted by enamel and chrome car crest medallion .....\$1.50  
**CRESTED KEY FOB** dangles to prevent scratching instrument panel, name your car .....\$1.50

**MONEY CLIPS, CUFF LINKS, LAPEL PINS, JACKET PATCHES, BRACELETS**, etc. designed around colorful replicas of the most popular sports and imported car insignia are big at MG Mitten. Ask for FREE CATALOG of hundreds of good things.



**MGA ASH TRAY-LIGHTER COMBINATION** fits between armrest and shift lever island, handy, useful. Black leatherette covered, pop-up lighter .....\$8.95



Get a new car lately? If so protect your investment by protecting its appearance. Keep it covered with a Mitten if it sits outside as little as four hours a day. Easy on and off, stays snug. Does a money-making job. Ask for details on cars not listed.

<input type="checkbox"/> MG Mitten	} Lightweight Sun and Dust Cover \$17.95	} DURICON Water Repellent \$24.50
<input type="checkbox"/> Healey Hugging		
<input type="checkbox"/> Alfa Apron (Rdstr.)		
<input type="checkbox"/> Fiat Frock (1100TV)		
<input type="checkbox"/> Triumph Tunic		
<input type="checkbox"/> Morris Muff	} \$22.95	} \$29.50
<input type="checkbox"/> Renault Romper		
<input type="checkbox"/> Ghia Gown		
<input type="checkbox"/> Porsche Parka		
<input type="checkbox"/> Peugeot Pegnolr		
<input type="checkbox"/> Minx Muff	} \$27.95	} \$32.50
<input type="checkbox"/> Fiat Frock		
<input type="checkbox"/> Saab Sack		
<input type="checkbox"/> Corvette Cap		
<input type="checkbox"/> Thunderbird Teepee	} \$22.95	} \$29.50
<input type="checkbox"/> Jaguar Jacket (140, 150, 3.4)		
<input type="checkbox"/> Mercedes Muff (190, 300 SL)		
<input type="checkbox"/> Volvo Vest		
<input type="checkbox"/> Vest for Volkswagen		

Order From

**MG MITTEN** Ph. MURRAY 1-5681

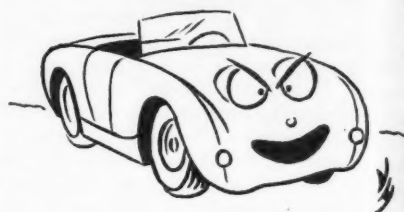
P. O. Box 4156, Dept. S-9

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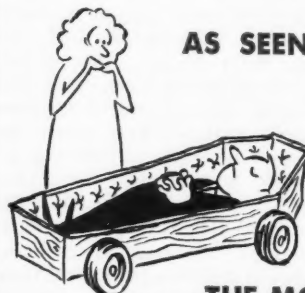
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## The SPORTS CAR



AS SEEN BY



... THE MOTHER



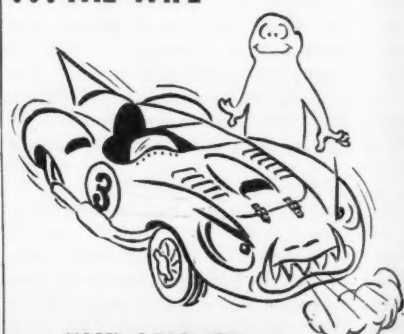
... THE LAW



... DETROIT IRON



... THE WIFE



... THE OWNER

# TECHNOTES

## HIGH-WAIST SUPER 90?

I am the owner of a 1960 VW sun roof with a Porsche industrial engine. I couldn't be more pleased. Like many, I am sold on the quality of the Wolfsburg Wonder but found the lack of ability to pass when necessary rather distressing along with other problems associated with 36 bhp, such as rowing up hills with the shift lever. The greatest improvement has come in fourth gear and the pickup and power in the 40 to 80 mph range leaves most VW drivers grinning very, very broadly.

The 1582 cc engine has interior dimensions matching those of the 1600, but it develops less power—"only" 62 bhp at 4200 rpm. With its 7.5 to 1 compression ratio, regular gas may be used and mileage is in the 22 to 28 mpg span. The engine is used in a myriad of industrial applications and in the Porsche inboard boat Hydra-Pak. The installation was done by Bright Motors, a Spokane VW dealer, but it is simple enough to be tackled by backyard enthusiasts.

The drive line is stock VW and the clutch assembly is the heavier transporter unit, but there is no appreciable pedal difference. The only work needed to fit the Porsche engine was trimming of the engine deck plate, plugging the centrally-located exhaust outlet on the Porsche-Ind.

muffler and replacing it with two tailpipes. Since the Porsche unit has no manual choke, the choke cable on the VW was connected to the mixture control, but is not used. The increased torque, I found, caused the entire power-drive unit to twist and rise under hard acceleration, resulting in annoying vibration of the gear shift against a metal plate under the rear seat. It was cured by building up the plate.

While overall performance is swifter and surer, the most noticeable performance increase is in fourth gear. Passing and hill climbing are taken in stride now. Timed top speed is an actual 79.2, with the speedometer indicating 85. There have been days, after a good tune, when the car has hit an indicated 95, about 90 actual. The timed runs were made under the supervision of the Inland Empire Timing Association. The slight weight increase from the Porsche engine has made no appreciable change in handling characteristics.

The possibilities with the Porsche industrial unit are intriguing for the performance seeker with a limited budget. It would appear possible to start with the basic unit, about \$600 installed in exchange for new VW engine, and progress toward a high-waisted Super 90 in stages through switch to dual carburetion, balancing and cam modification.

The Porsche-VW will do a standing quarter mile in 19.6 seconds, hitting about 64 mph in that time. Using a red line of 5000 rpm, it achieves 26 mph in first, 45 in second, and 68 in third.

Gary Henley,  
Spokane, Washington

## ALFA STARTING TIPS

Poor cold-weather starting of Alfa Romeos is a fairly common complaint. I thought it might be interesting for your readers to reap the benefits of my experience. There is no real reason why an Italian engine should not start as easily as an American one, assuming the spark plugs and points are in good condition. With the Alfa, there are three main problem areas to consider:

1. Throw away that cute little 12-volt Italian battery and install a full-size American brand.
2. Make sure the fan belt is properly adjusted. Many Alfas have aluminum crankshaft, fan and generator pulleys which wear quickly. The fan belt retains enough tension to extinguish the ignition warning light, but often slips and does not produce a charging rate equal to the load. Steel pulleys are used on later Alfas and should give no trouble.
3. The biggest offender turned out to be the high-tension wiring. It leaked electricity like a worn garden hose leaks water. After replacing it with a good local brand, my Alfa has been starting with a flick of the switch.

In extremely cold weather, it may be helpful to aid the choke by taking a jab at the accelerator pedal. I'm sure if these hints are followed, Alfa owners can expect satisfactory starting. The three-way electrical check has been helpful to other Alfa owners in this area.

George A. Hatcher  
Hagerstown, Maryland

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**SPORTS  
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SEPTEMBER 1960

Even without optional tops, Juniors are fantastic fun! Turn, read, and enjoy to the hilt.

Track Report

**WAINER  
DAGRADA  
VOLPINI**

by Karl Ludvigsen





► We've never had such kicks from cars! And believe us, these Juniors are cars in every sense of the word — and in a few more senses the word doesn't begin to imply. For example does "car" tell of a delicious slam in the back and a ripping-calico snarl ringing in the right ear? Does it describe the snug fit of a bucket seat and the feel of controls that link your hands and feet to the wheels? Can "car" mean a machine that becomes one with you, that does all you tell it to and always offers that inbuilt ability that flatters and persuades you past the limits you once thought ultimate? No, "car" doesn't do it, but "Formula Junior" certainly does!

SCI has already track-tested a brace of Juniors in 1960: the Taraschi in March, and the Lotus in June. They were both top-notch cars but because of time and distance barriers it was impossible to relate them to each other. This time we drove a trio of brand-new Italian Juniors in a short space of time on familiar tracks and under conditions that weren't favorable to lap-time comparisons but were favorable to having one hell of a good time — plus getting some idea of how these cars stack up against each other and against their competition.

These three have a couple of things in common: they're all Italian, and they're all distributed in this country by Biener Imported Cars, 250 Northern Boulevard, Great Neck, L.I., New York. Apart from this they're as individual as three cars built to the same formula can possibly be. Each has its own character, its own way of getting the job done, but it's a tribute to Count Lurani's foresight that all three reach a very similar level of performance — a high one!

In Milan, Gianfranco Mantovani puts together the rear-engine Wainer, a car that was first hailed in Italy as the "poor man's Junior". It's debatable whether it still warrants the name at \$4,500 in this country, but it certainly does deliver performance for the money. Mantovani fits the basically-1100 Fiat engine behind the driver and mates it to a gearbox that uses the heavy-duty case from the Fiat Multipla and special close-ratio gearing. At a compression ratio of 9.8 to 1 the engine delivers 87 SAE bhp at 6500 rpm, and the cars now being delivered here have the new inclined Weber carbs, like those on the OSCA 750 we track-tested last month. Dimensions are as follows: wheelbase, 78.5 inches; front and rear tread, 47.5 and 46 inches; weight, 896 pounds.

The Wainer's based on a simple twin-tube frame which carries front suspension derived from the Fiat 600 and rear suspension that uses diagonal swing arms from the Multipla, turned upside-down. Transverse leaf springs are used at both ends. Under the long nose is the fuel tank and at its tip is the Wainer emblem, a pair of turtles. It's an odd symbol for a racing car, but a single turtle was the insignia of Nuvolari, with whom Mantovani was closely associated at one time. In this way he keeps alive the sign of the Flying Mantuan.

Very different in every way is the Dagrada, which is built in Milan by Angelo Dagrada (of all people). He's not a car-builder by trade, but he had picked up so much information and know-how on the hopping-up of Lancia's little Appia V4 that he just had to put it to use in a Junior. He put it to use, all right: quoted output is 100 SAE bhp at 6500. Scoffers are directed to this dramatic fact: at Bridgehampton on Memorial Day our test Dagrada, in the hands of Jerry Titus, was hot competition for a much-raced Stanguellini — and the Dagrada was running (deliberately) on three cylinders!

The much-reworked Appia engine drives an 1100 Fiat axle through the Lancia four-speed box, the whole being carried in a tubular ladder frame with Fiat 1100 front suspension. These are the dimensions: wheelbase, 79 inches; front and rear tread, 49 and 48 inches. Weight isn't quoted, but it's unlikely to be under the limit. The price is \$4,800.

Third in our trio is the Volpini, which comes from a

relatively large speed shop — also in Milan. Laid out conventionally, much like the Stanguellini, the Volpini is one of the prettiest Juniors. Its very nicely reworked Fiat 1100 engine is rated at 89 SAE bhp at 7000 rpm, working at a compression ratio of 9.8 to 1. Drive is through a close-ratio 1100 box to the usual offset-1100 rear axle, located by radius rods, and front suspension is also 1100, without an anti-roll bar. Both the Volpini and Dagrada use a startlingly light cast-alloy wheel. These are the measurements: wheelbase, 82.5 inches; front and rear tread, 48.5 and 47.5 inches; weight, 902 pounds.

For the Volpini's \$4,400 price tag you get a frame with a difference, a layout much closer to a real space frame than the other two offer. All three cars use variations on the 1100 Fiat brakes, fitted with Al-Fin drums, but for the Volpini you can also get a two-leading-shoe "Gatto" conversion for the front wheels only.

Those are the facts; now for the fun! Before we jump into these cars for a few fast laps of Lime Rock Park and Bridgehampton, I should mention that I'm a bulky type, a little over six feet from end to end and displacing about 185 pounds. In general these Italian Juniors just aren't built to my general size, a situation Marty Biener's working hard to correct. He knows his American customers demand more room than these cars originally offered, and he's done his best to develop bigger cockpits for the export trade. On none of them are the seats adjustable anyway without resorting to *force majeure*, which is just fine for a racing car. There's nothing worse than a seat sliding around under you at a critical moment.

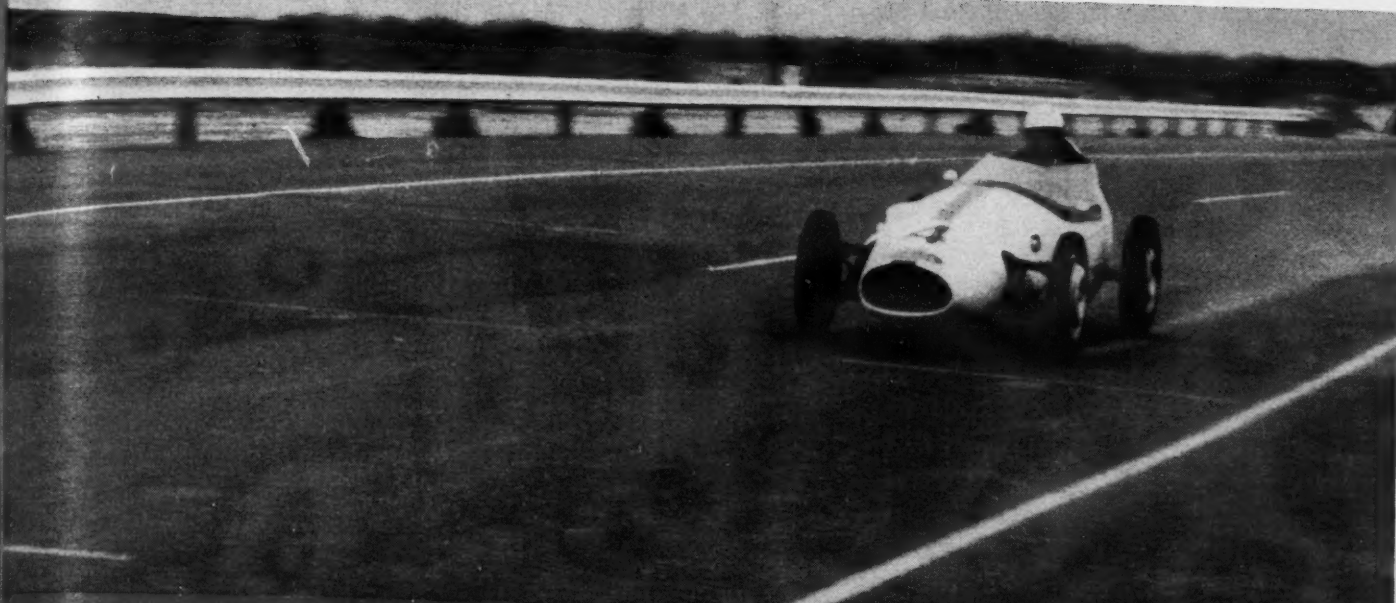
The tightest fit of all three was the Wainer — which was also one of the most exhilarating to drive. Once up over the high, wraparound windshield it was a snug fit in the bucket seat, and I found my knees up against the dash right where my hands needed to be occasionally. One advantage of a rear-engined Junior should be leg room aplenty, a point Biener has already made clear to Mantovani. Later Wainers should be better. Pedals are easy to sort out and the accelerator needs real pressure that's surprising at first and acceptable later. You feel that the little cork-rimmed wheel is right in your lap, and you find that it's flexible in itself and very flexibly mounted.

A glance downward shows the small-diameter tach and two lesser dials. A glance forward — practically nothing! You really sit out in the open in the Wainer with a terrific view all around, well above the plexiglass, and darned little ahead but two wheels straddling your field of vision. It's a location that takes absolutely no getting used to and makes you feel right on top of the job.

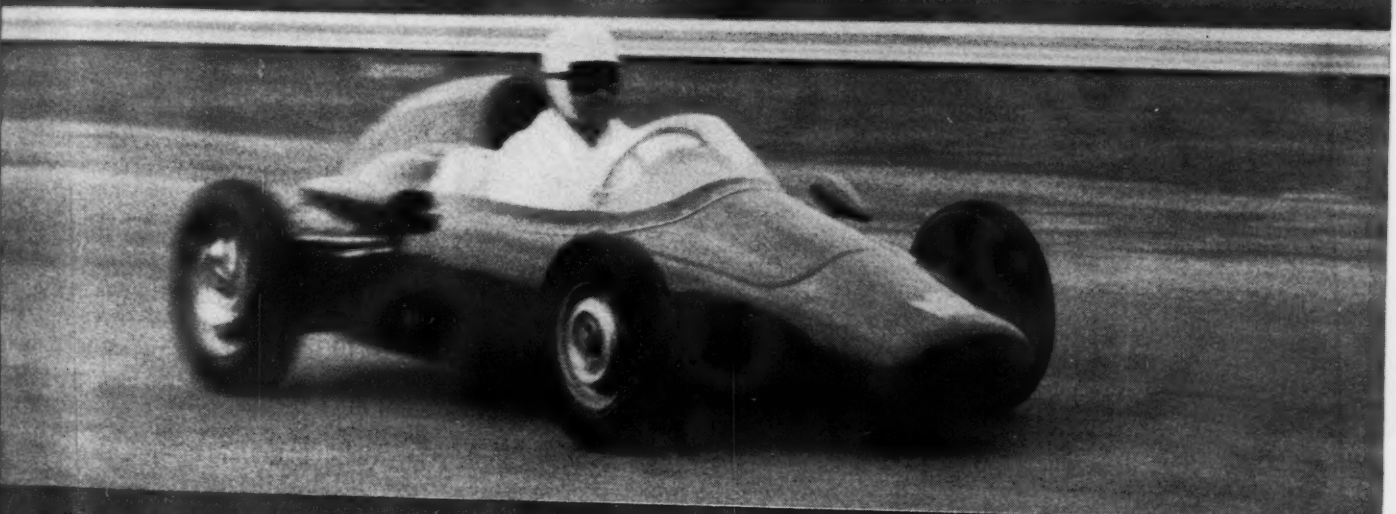
Like most Juniors the engine doesn't deliver much below 4000 rpm — and there was a real flat spot right at 4000 on this car — but from there right on up there's poke aplenty. In fact it seemed exactly right on this car: there's just enough power to be helpful in corners, to allow you to place the car with the throttle, but not so much so that a surgeon's delicacy is demanded. It's this just-right quality that makes the Juniors, and the Wainer in particular, ideal for learning to go fast. The stubby shift lever on the right puts through changes instantly, and the independent rear suspension sees that all the power is directed to the road where it belongs. Since the volume of power extractable from Juniors is limited it's important to use all you have; for this reason an independent rear is likely to be more and more in demand. This one really works, once the rear spring is bedded down and the proper camber angle is selected (by means of shims where the hubs mate with the swing arms).

There's nothing you could call "rear-engined" about the Wainer's handling. With an oddball combination of Michelin X's at the front and Pirellis at the rear it has a nice, balanced, responsive "race-car" feel that lets you put it just where you want it. If by chance you do get the tail end

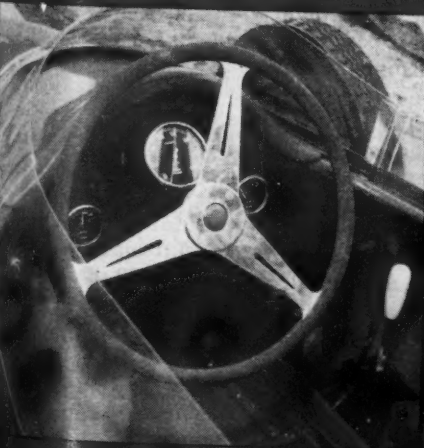
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SCI's Editor raises the dust at Bridgehampton in Lancia V4-powered Degrade. Even running on only three cylinders, this F. Jr. proved competitive.



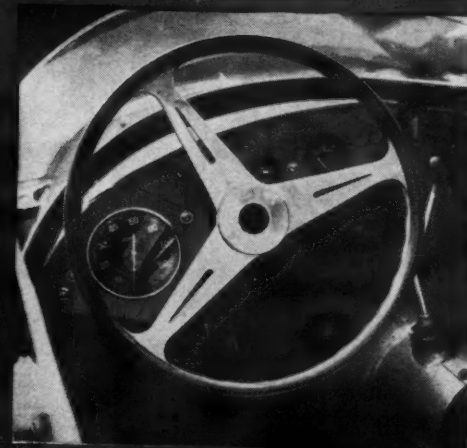
Turtles on Wainer's hood have nothing to do with car's pace judging from Marty Blener's fast trip down Lime Rock straight in the rear-engined Junior.



Dark, near cockpit of the Wainer features a cork-rimmed wheel, tach, water temp and oil pressure dials. Knee-room's only scant.



Fine finish, adequate room mark Degrade's cockpit. Matte finish eliminates windshield reflections. Cars instrumentation is impressively comprehensive.



Padded dash and simple instrumentation are Volpi's trade marks. Knee room is better than in Wainer, also superior to the Degrade cockpit.



hung out farther than you'd like, though — and when it goes it goes quickly — you find that the steering isn't quite fast enough to give you maximum corrective lock in minimum time. A quicker ratio would be useful.

The Wainer's weakest point is its braking. First, the 600-

derived front suspension isn't very rugged and tends to flex under heavy braking torque; also it's not mounted and braced to the frame as much as it could be. Second, the 12-inch wheels supplied as standard at the front tend to shroud the drums from cooling air, but replacing them with 14-inchers introduces handling discrepancies. Both of these are details that can be worked out by the owner, as he gains experience in setting the car up. With this done, the Wainer should stop with the best. It goes fine, now.

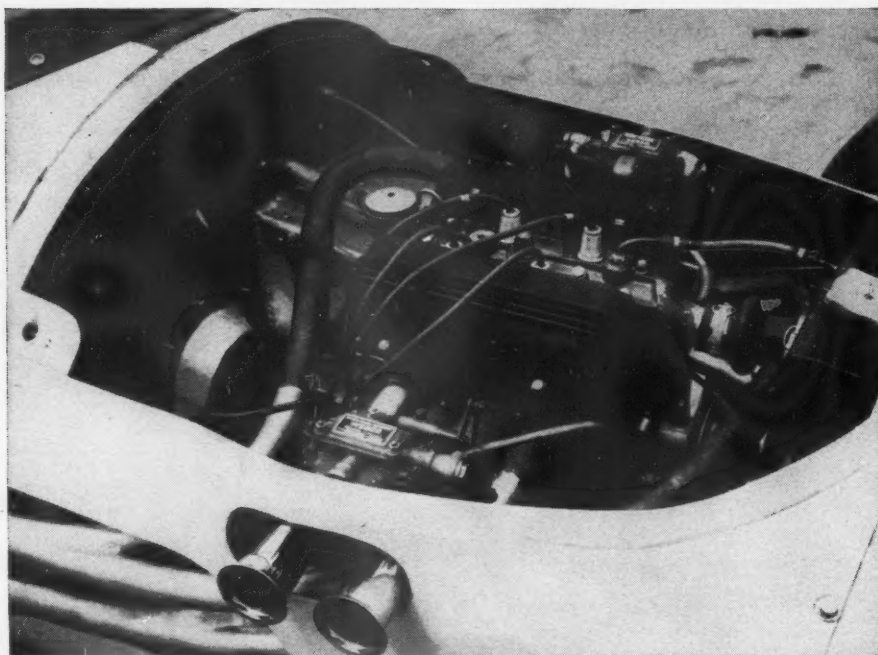
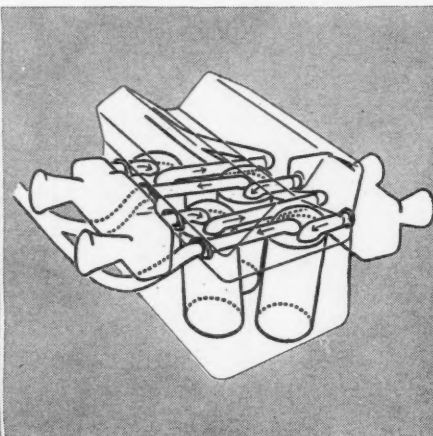
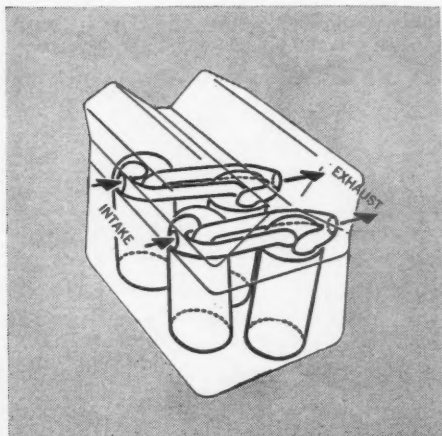
Where sheer GO is concerned, though, it's hard to beat the Dagrada, a stubby little vehicle that's been cleaning house in its native land. This is the more remarkable because there are only a handful of Dagradas running today, but run they do, with a vigor that shows those quoted horses aren't all on paper. The office is absolutely all business, with a minimum of trim and a handsome black dash with a big 8000-rpm tach and three smaller dials. The small, curved seat is rakishly angled back in an ideal driving position — if you're a slim 5 feet, 10 inches. You sit relatively low in a position that's more nearly central than in other front-engined Italian Juniors, with a good view forward over the sloping snout.

As the drawing shows, Dagrada's really gone to town on the Appia's cylinder head, making four carb throats grow where only two could before. He's also produced four separate exhaust ports, and has run all the exhaust piping around through the engine room and out a single pipe on the right-hand side. Asked why he didn't run a separate pipe back for each bank of two cylinders (a seemingly simpler and neater layout), he said he'd tried it but found that the single-pipe system gave substantially better scavenging and higher output. Also, he said he'd received lots of complaints about the way the car sounded, what with spectators on one side of the track hearing the equivalent of a two-cylinder engine! Dagrada doesn't have to worry about that now. This engine

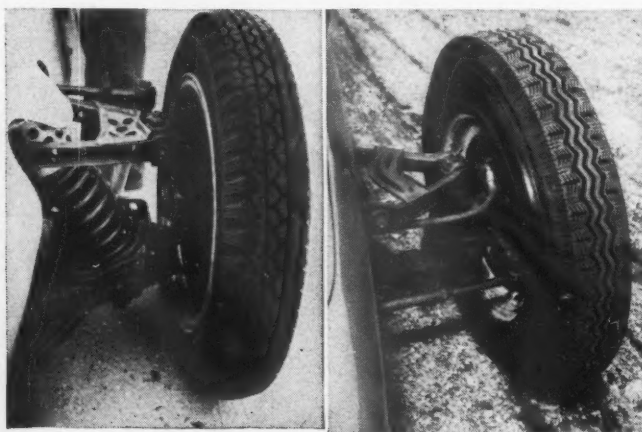
winds with a sharp, crackling rasp that can usually be heard and recognized all the way around a race track. The small-diameter pipe goes well past the cockpit, so the racket isn't unbearable for the chauffeur's eardrums.

In addition to sounding good this little Lancia really carries the mail. It's far and away the hottest Junior we've tried to date. During our test the 40-mm Webers were fitted with very large venturis, suitable only for flat-out operation, and under 4500 rpm there was very little useful power and an annoying tendency to go dead whenever the throttle was stabbed for a downshift. Careful tuning should correct this. But as the tach needle swings by 4500 the engine comes wildly, violently alive and demands all your discretion and will-power to shut off and shift before 7000 rpm, let alone before the recommended red-line of 6700. With power like this, wheel-spin and its control become real problems. In passing, it's interesting that Wolfgang von Trips is thinking of putting a Dagrada-Lancia engine in his new TCA Junior, described in last month's SCL. That should make it unequivocally The Ultimate Junior.

(Continued on page 79)



Extensive intake-exhaust port reworking is part of the Dagrada's performance recipe. Note how intake ports are shortened by using former exhaust ports and carb mounted on the left side of engine.



Husky Dagrada front end uses Fiat 1100 parts drilled for lightness but the Wainer uses lighter Fiat 600 components, flex under heavy braking. Both these cars and the Volpini exhibit typical Junior driving performance, fun!



Nürburgring—a tortuous, twisty car-killer. This year its fog-shrouded 1000 kilometers held new peril—fire!

## FLAMES FOG and FAST MACHINERY

by Jesse Alexander

► Fire, explosion, outstandingly good and bad driving, fog, a huge entry and a record crowd were the principal attributes of the 1960 Thousand Kilometer Sports Car Race on the Nürburgring.

The fire was a colossal conflagration set off by a Ferrari mechanic about to refuel Scarlatti's 2.4 liter V6. Before the car was even stopped and the filler cap opened, fuel was gushing out of the hose and spilling onto the blistering exhaust pipe; in an instant the most frightening fire I have ever witnessed was threatening to engulf the entire pit area. Flames and smoke shot high into the sky, tires exploded and almost everyone ran for their lives after the initial dumbfounding shock wore off.

Even though the mechanic had closed the valve on the hose, as he ran, it dropped to the ground knocking it open again. The effect was similar to a flamethrower. Another brave mechanic jumped into the pits to shut off the tap to Ferrari's special high-pressure refueling apparatus and then ran back to help Georgio Scarlatti, who received only minor burns on his left arm. As can be seen from the

pictures the car was destroyed completely. Ferrari is now par for the course, Aston Martin having set fire to the Goodwood pits last year, Maserati igniting the wooden Swedish pits at Kristianstad in 1955 and Alfa-Romeo responsible for the gigantic Monza pit fire in 1952. So everybody's done it, please no more pit fires, my old heart can't stand the strain.

The outstandingly good driving was for the most part that of Moss and Gurney, who drove the 2.9 "Birdcage" Maserati to Moss's third successive Nürburgring victory.

The Camoradi-entered "spaghetti auto", as the German commentator called it, really proved itself on the Nürburgring. The victory was a surprise not only because tire and brake problems confounded the practice sessions but also because the opposition was formidable. Goodyear didn't have proper-sized tires for the rear wheels so Pirelli 6.50x16 "Super Sports" tires were fitted, to be used with the Goodyear "Sports Car Special" 5.50x16 on the front. In spite of this mixture the "Birdcage" handled well in both wet and dry.





Scarlatti aided . . . flame dousing starts . . .



Firemen retreat . . . blaze roars skyward . . .

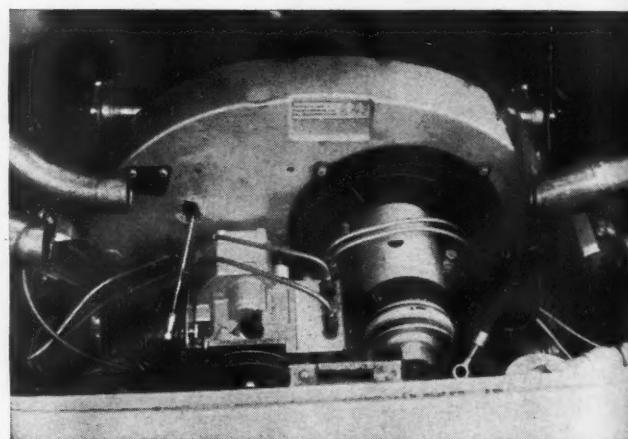
Beefed up considerably, the rear half of the chassis now can cope better with the gearbox and differential loads. The transmission itself has been strengthened and the engine's pistons and lower end have been altered. On the 'Ring, the Maser ran like a charm except for a broken oil pipe, which cost them first place for 15 laps. Piero Taruffi ran the Camoradi pit, assisted by chief Maserati mechanic Bertocchi, with Taruffi's presence and know-how probably being the best thing that has happened to Camoradi yet. Not only was the victory a boost to the team itself but to Maserati as well, a company long overdue for a pat on the back.

There was a Camoradi-entered Corvette at Nürburg driven by Fred Gamble and Lee Lilley. These two neophytes to the 'Ring had their work cut out, for they were driving a car not exactly well-suited to the circuit. Gamble's best time was 11'18", comparable to a good pushrod Porsche time. Best Carrera time this year was 10'44" and a Lotus Elite turned a sizzling 10'47", while Moss's f.t.d. was 9'37". All this is not meant to belittle the job that Gamble and Lilley did but only to show how completely outclassed the ponderous Corvette was. All credit in the world is due both these boys and Camoradi for coming and *trying*. A wheel bearing finally let go on the Chev and that was that.

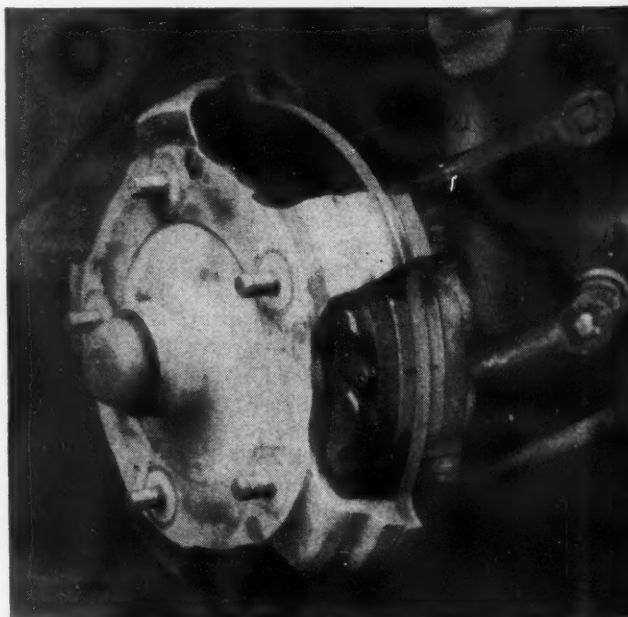
Porsche tried everything to pull off an overall Nürburgring win this year (the dream continually lurks in Huschke von Hanstein's brain) and they came close to doing it. Jo Bonnier's driving seems to get better and more inspired each year. A wet track gave the RS 60 Spyder a marked advantage, and running on German Dunlop "SP" G.T. tires everytime the fog and rain came, the Porsche came into its own. Even on a dry track the latest 1.7 Spyder is remarkable. Bonnier's best practice time was given at 9'43.6", which just shows what continuous, patient development on one basic design can produce.

It was interesting to note that during the rainy portions of the race, none of the Porsche drivers could agree on whether or not to use the single windshield wiper. One thing was obvious: none of them could see as well as they would have liked. The heated discussion about the F.I.A. sports car regulations continues with one side feeling it will force the accessory manufacturers to develop a wiper mechanism that will do the job even at speeds over 125 mph. Practically all the drivers, on the other hand, are upset and troubled by the inherent danger of the situation of just not being able to *see*. Le Mans, for instance, at night with the fog and rain will be potentially very dangerous. It always is. But it's clear that the F.I.A. is bent on stamping out sports car racing, on the oft-repeated grounds that they are only disguised racing cars. The answer to this is that sports

car racing is only another kind of car racing, a spectacle which the public comes to see, and the F.I.A. is ruining this in a self-righteous attempt to make racing improve the breed. On and on the discussion goes; where it will stop



WÖRNER



Porsche injection and discs were photographed for first time at the 'Ring. Shown with ram pipes removed, injection is from Friedrich Deckel firm in Munich. Disc calipers grip from inside, like original aircraft units.



Out of control holocaust engulfs pits . . .



Brave crewman shut off fuel, fire out, car charred.

**NÜRBURGRING 1000 KILOMETERS — MAY 22, 1960**  
14.2 miles per lap

Pos.	Driver	Car	Time
1	Moss/Gurney	Maserati	7:31:40.5 (82.5 mph)
2	Bonnier/Gendebien	Porsche	7:34:32.9 (82.1 mph)
3	Allison/Hill/Mairesse	Ferrari	7:35:44.1 (81.9 mph)
4	Herrmann/Trintignant	Porsche	7:37:57.5
5	Munaron/Gregory	Maserati	7:40:59.7
6	Walter/Losinger	Porsche	7:41:14.8
7	Greger/Linge	Porsche Abarth Carrera	7:36:49.0
8	Abate/Davis	Ferrari GT	7:41:51.1
9	de Beaufort/Frere	Porsche RS	7:33:08.1
10	Strahle/Walter	Porsche Abarth Carrera	7:33:16.6

nobody knows. But the regs stand, the F.I.A. refusing to back down.

Contrary to Porsche, none of the four factory Ferraris were identical. There was a wishbone independent-rear 3-liter for Trips and Hill, a de Dion 3-liter for Allison and Mairesse, a V6 wishbone car for Ginther and Scarfiotti, and a V6 rigid-axle car for Scarlatti and Seidel. The Rodriguez brothers were teamed up on a 2-liter V6 with solid rear axle. The greatest handicap Ferrari had this year was the lack of a suitable rain tire, and as the Italian cars practiced mostly on a damp track, their training times were not sensational. Hill was credited with a 9'59". Strangely enough, Phil Hill found the old de Dion car to his liking on the Nürburgring after he switched into it during the race, Trips having broken the engine on their 3-liter. It seems that the wishbone rear suspension is critical to set and doesn't allow the driver to really "hang it out" until he and the car are on good terms. Phil pushed the de Dion car into an overall third slot but just couldn't do a thing against the Maser nor against Bonnier's Porsche.

The glory of England was upheld by three privately-entered Aston Martins of the DBR1 vintage, as well as a DB4GT which the organizers refused to allow to start on the basis that it had not been homologated. Actually it had,

but only less than 14 days before and the fine print in the F.I.A. bible says that 14 days must elapse after the date of homologation before a car can run.

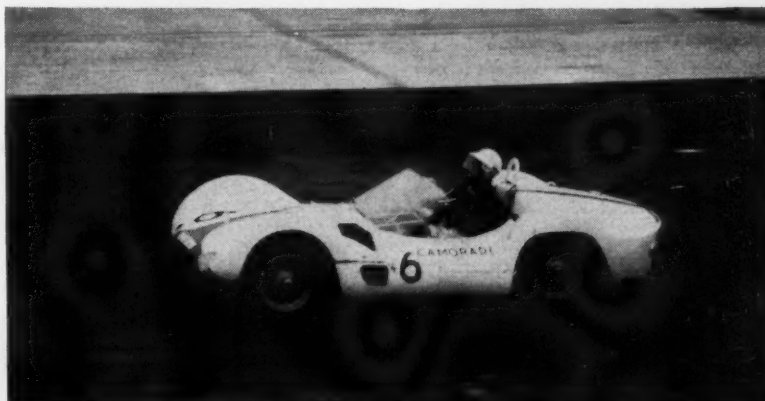
Quickest of the Astons was the 1959 Le Mans-winning car driven by Roy Salvadori and Jim Clark. A factory-built engine rested under the bonnet and this, coupled with "new boy" Clark's fine driving, put up a surprisingly fast performance in training and in the first five laps of the race until valve trouble closed their book. Clark was first off the mark in the Le Mans start, even beating Moss into the South Curve.

(Continued on page 87)



Moss and Gurney congratulate Piero Taruffi who quarterbacked the Camoradi strategy at the 'Ring. Beefed-up Maser ran like a charm for 1000 km.

Winning Type 61 Maserati was backstopped by Munaron/Gregory car, which placed fifth. Intense work on drive line and chassis led to reliability.

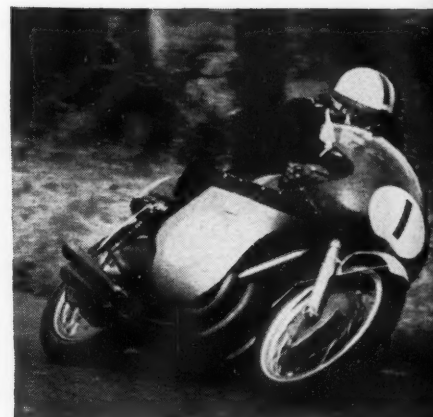




# CHANGING A ONE-TRACK MIND

by Dennis May

Young John Surtees has ridden to the top of the heap in European motorcycle racing. Can he now drive to the top in the fast and frantic car-racing world?



Where Surtees stops and the bike begins would be hard to say. Ten-tenths riding such as this stems from utter and complete self-confidence.

Three top two-wheel exponents talk over the problems confronting bike riders. Left to right: Geoff Duke, Surtees and Bob McIntyre.

► Does John Surtees, Champion of the World for 1958 and '59 in the two fastest motorcycle racing classes, have the makings of a great G.P. driver? You could roast this 26-year-old Londoner over a slow fire before he'd cast a vote of confidence in his ability to make the transition successfully, so for the moment let's forget what he thinks and consult an independent authority, David Yorke, Vanwall team manager and Tony Vandervell's first lieutenant in the campaign that won Britain its first F.1 Constructors' World Championship in 1958. Holding still for stories of "a coming Moss" or "an embryo Brooks" or "another Hawthorn" is a vocational hazard with team managers, and David Yorke, like others of his profession, has learnt from longtime disillusion to view such claims through jaundice-colored spectacles. Yet here is what he told me about Surtees, following Goodwood try-outs last winter on the old-type Vanwall:

"For a start, to give him a chance to get used to the feel of the gearbox and disc brakes and so forth, we told him to take it as easy as he liked for as long as he liked. We weren't going to put a



John Surtees learned motorcycle racing at his father's knee, as it were. Here they compete with Senior astride and Junior in the chair.

stopwatch on him and we said so. Inside of five laps he was hurtling down the straight at peak revs. From then on his progress was staggering. It seemed incredible that anyone so inexperienced could catch on so fast.

"We spread the session over a couple of consecutive days and he did 140 laps all told. By the second day he was getting around in two seconds under the previous best Vanwall time for this circuit. Conditions at the time were so-so . . . not actually wet but damp enough to put about half a second onto lap times.

"Mistakes? Oh yes, he made some. But he has an extraordinary knack for getting out of trouble, also keeping his engine running in situations where many an experienced driver would lose it. For instance, while feeling his way he did a couple of full 360-degree spins

without losing the engine, then just let in the clutch and got on with it, completely unruffled.

"All this was on a rather out-of-date chassis with very rigid back suspension — not the easiest thing in the world for a beginner to get the hang of. He impressed me very much as somebody who likes to sort things out for himself. He isn't much of a talker, as you know, but he asks questions and they make sense. He doesn't seem to know the meaning of fear, yet at the same time he isn't reckless either.

"Of course, he had the track to himself during these tests but with all his motorcycle racing experience I don't think he'll have any trouble in a full field. Another thing that struck me was the way he'd try all kinds of lines on corners, bad ones as well as good. The good ones won't always be vacant for him and he has the sense to practice accordingly. Give him a little time and I think he'll be Moss's equal."

Staggering. H'mm. Incredible. H'mmm. Prospectively Moss's equal. H'mmmmm.

"Inexperienced" can be a relative term, so let's see what it means as applied to Surtees. When Vanwall tried him at Goodwood he'd never taken part in any form of car competition, and incidentally still hadn't when this story was written. (Surtees has since taken part in several F.2 and F.1 races — Ed.) He had driven two racing cars, a DBR1/300 and an F.1 Aston Martin, both of them *in camera*, like the Vanwall, and we'll return to this Aston initiation later. He'd only *watched* two car races in his life, last year's British and Italian G.P.s, so there wasn't much he could have picked up by precept.

From the age of eighteen, when he

bought his first sports car, a Jowett Jupiter, Surtees has had a taste for fastish motoring on four wheels, but with so little combative urge that he never bothered to join a club. Next in line to the Jupiter was a Ford Zephyr, then another Zep, then a Porsche 1500 coupe in 1955, then a 2.6 Aston, then a 3-liter Aston, then a 300SL Mercedes, another 3-liter Aston, finally a Type 507 BMW, which he still has. The BMW, with a range of experimental and exclusive mods executed by the makers, gives off 200 bhp and has seen 148 genuine mph on an Autobahn. John isn't quite sure whether the car is a gift or a loan from MV Agusta, the Italian motorcycle firm whose 4-cylinder fire-engines have won him all his World Championships, but they don't show any signs of wanting it back and he's in no hurry to part with it.

In company with John Hartle, his close friend, compatriot and fellow member of the board-sweeping MV team, Surtees has used the BMW for pre-training circuit explorations all over Europe, but mostly with the roads open to the general public and therefore at sub-racing speeds. It was about three years ago that the idea of maybe someday having a go at car racing occurred to Surtees and Hartle, and subsequently they kicked the notion around in a sporadic and academic sort of way without getting anywhere with it. "I like to try new things", says Surtees, but the trouble was finding time and opportunity for this new thing when the old thing was not only occupying him ten-tenths but also paying irresistibly rich dividends.

Then, in London one night in '58, he found himself neighbored to the

(Continued on page 84)

Young Surtees on four wheels looks just as good as young Surtees on two. Here, in a BMC-powered Formula Junior Cooper he doesn't seem a bit worried about his transition from racing bikes to racing cars.



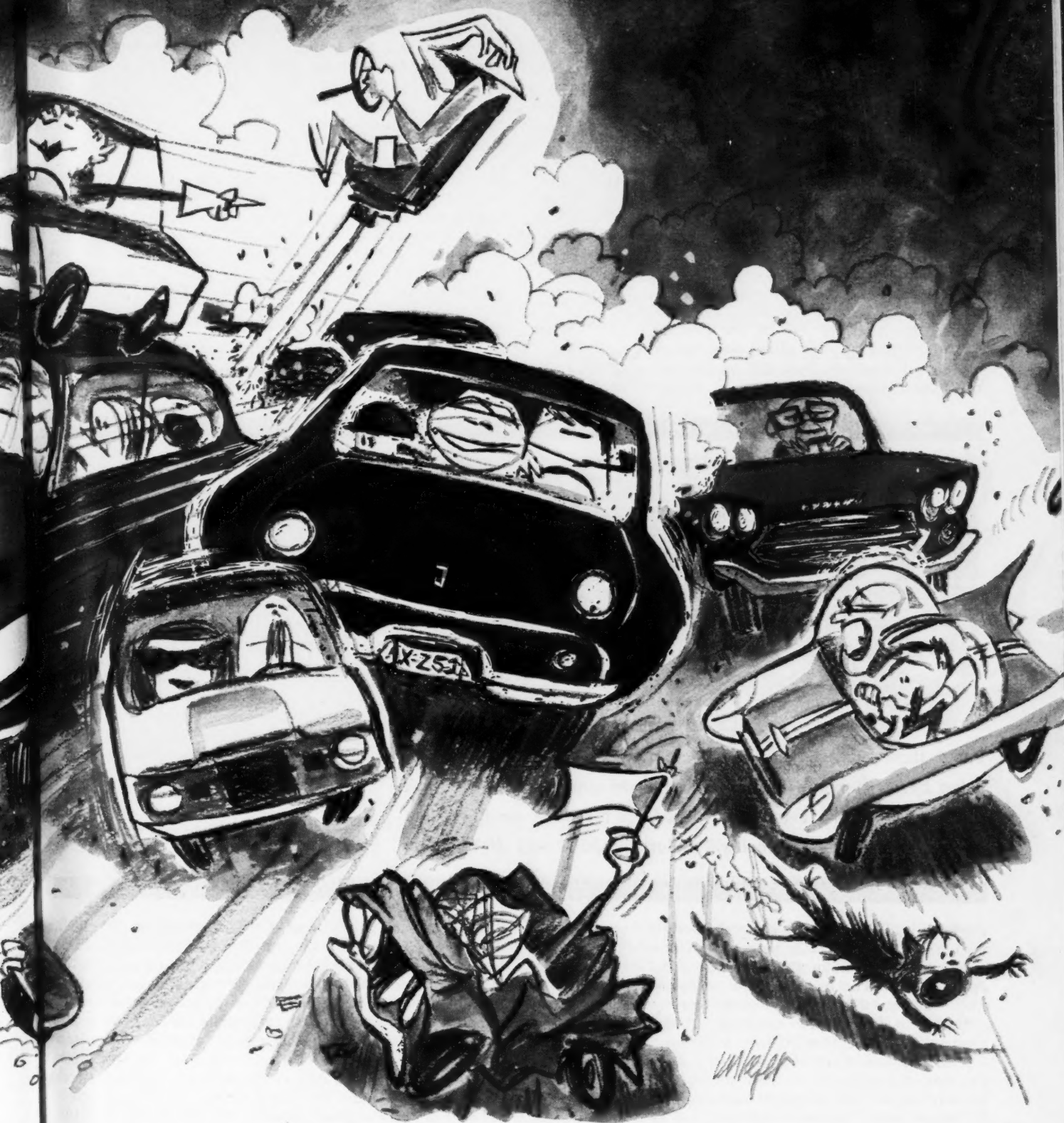




**THEY  
DON'T BUILD 'EM  
LIKE THAT  
ANY MORE!**

**by Roger T. Patterson**

► When my wife told me about the Sloans after work yesterday, I wasn't really too surprised. I mean, they seem to be the type who'd pull a stunt like that. Imagine anyone trying to smuggle in one of those big imported jobs this day and age. But, as I said, it would be just like them. Always had to have the biggest and flashiest car on the block. And they usually did too, right up until the Supreme Court upheld that ruling last year. You know, the one making it illegal to import any foreign cars into the States. They



almost got away with fake 1974 registration tags, but forgot the new '75 plates are magnesium, instead of aluminum, and got themselves nailed by a Thruway Electrochecker. Yeah, can you beat that. . . .

What do you mean, you don't follow me? Where the heck you been lately? Oh. You have? That's out where they shoot off those sections of our space station, isn't it? Ever since 1960, eh? Boy, you've got a lot of catching-up to do. Here, have another beer while I try to square you away.

Let's see now. Back in the early Sixties, must have been about the time you left, there was a lot of legislation being kicked around and all of it was aimed at new cars. Most of it had to do with freezing the size of 'em. You probably remember those days when they kept building them bigger and bigger every year, don't you? Well, making 'em larger and putting in hotter engines was bad enough, but when they began getting wider . . . that was it. Most of the ideas were pretty grim at first. *(Continued on page 80)*



► In the engine conversion specialists' book, a *dernier cri* never remains *dernier* for long. Almost before the ink was dry on last summer's announcement of the Austin-Healey six's rerating from 2639 to 2912 cc, with a resulting gain of 7 bhp and 26 pound-feet of torque, British tunesmiths were in quest of further performance bonuses for the hottest edition of BMC's C-series engine. First to yell Eureka, to the best of our knowledge, was K. N. Rudd (Engineers) Ltd., of Worthing, Sussex, England, a firm with a reassuring racing background, e.g., the Rudd Racing Team's 2-liter class win at Le Mans last year with a stock but exquisitely prepared AC Ace. The standard BN7 Austin-Healey 3000, as road-tested in SCI's August, 1959 issue, gives 130 bhp gross at 4750 rpm and 175 pound-feet of torque. With the Ruddspeed condiments added, corresponding figures are 178 bhp at 6000 rpm—a 36.2% power increase—and 192 pound-feet of torque.

#### VISIBLE CHANGES

There isn't anything startling about the means used to achieve this startling end. It just adds up to the old story of fuller filling plus a hoist in compression ratio that's little more than nominal. Star dish on the menu, which is also the most expensive single item, is conspicuous as soon as

#### OTHER RUDD OPTIONS

Rudd also markets the makings of certain chassis modifications aimed at improved safety and roadability. These are all listed separately, so you can opt for some and skip the others, or skip the lot if you like. Items under this head are harder front springs and competition shock absorbers, reset rear springs (with the incidental benefit of a slight increase in clearance under the 3000's inconveniently low belly), and a vacuum servo assist for the existing Girling disc brakes on the front wheels. Source of this boost is the Clayton Dewandre Mot-A-Vac unit, which tucks away tidily within the right-side front fender and derives its vacuum from one of the induction balance pipes. The car we tested also had racing front disc pads.

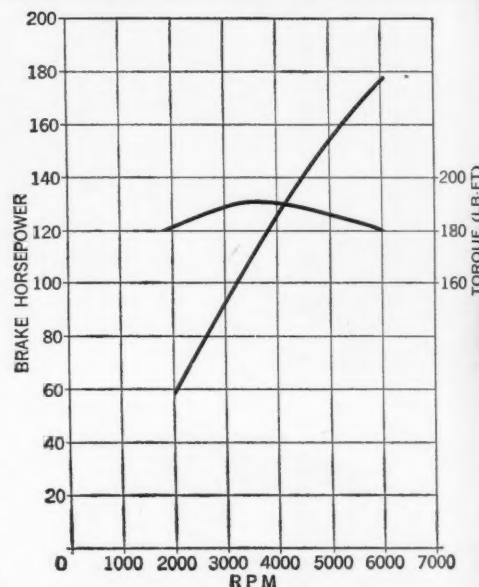
Further Rudd options are two additional dash instruments—ammeter and oil thermometer—and a set of modified brake, clutch and throttle pedal pads. Former are matched, calibrated in white on black dials (which incidentally doesn't match the rest of the instruments, which have black figures on white faces).

Purpose of the pedal modification is twofold: first, to increase the normally-marginal lateral clearance between all three controls; second, to do something to correct an inherent

# HOTTEST HEALEY 3000

by Dennis May

You'd think most buyers of the spirited Healey 3000 would be sated by its standard tune, but Ken Rudd supplies a power pack that pumps in 48 extra bhp. Rudd isn't resting here; he has plans for a new version that will endow the 3000 with 200 horses!

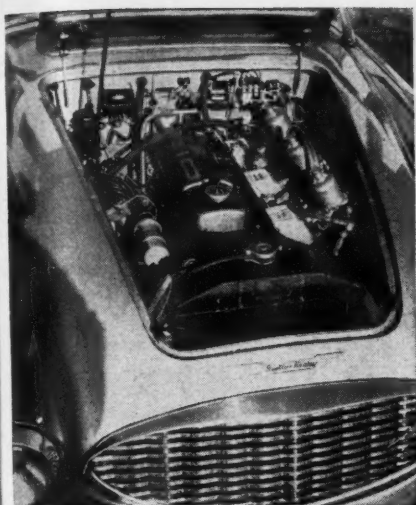


the hood is lifted. This is a completely original intake system with triple HD6 SU carbs mounted on separate semi-down-draft manifolds, cast in aluminum alloy and finned on their upper faces. (The normal setup, of course, is dual HD6's on a common gallery.) Large-diameter copper balance pipes connect the three Rudd manifolds, which, though closely-neighbored to the two exhaust collectors, have no direct-contact hotspots. Lack of space under the adjoining fender precludes the fitting of air filter/silencers, so the SU intakes are left agape. The standard twin-pipe exhaust plumbing is retained, but a shorter system of larger bore, terminating just ahead of the left-side rear wheel, is available to special order.

The invisible end of the engine deal comprises a Rudd-speed camshaft, designed for extra power without loss of flexibility, and a reworked cylinder head with matched and polished combustion chambers, enlarged and highly-fettled ports, modified valve seats. Work on the head puts the compression up from 9.03 to 9.7 to 1. Purpose of the valve seat sculpture is to maintain clearance between the valves at full lift and the adjacent edge of the cylinder block.

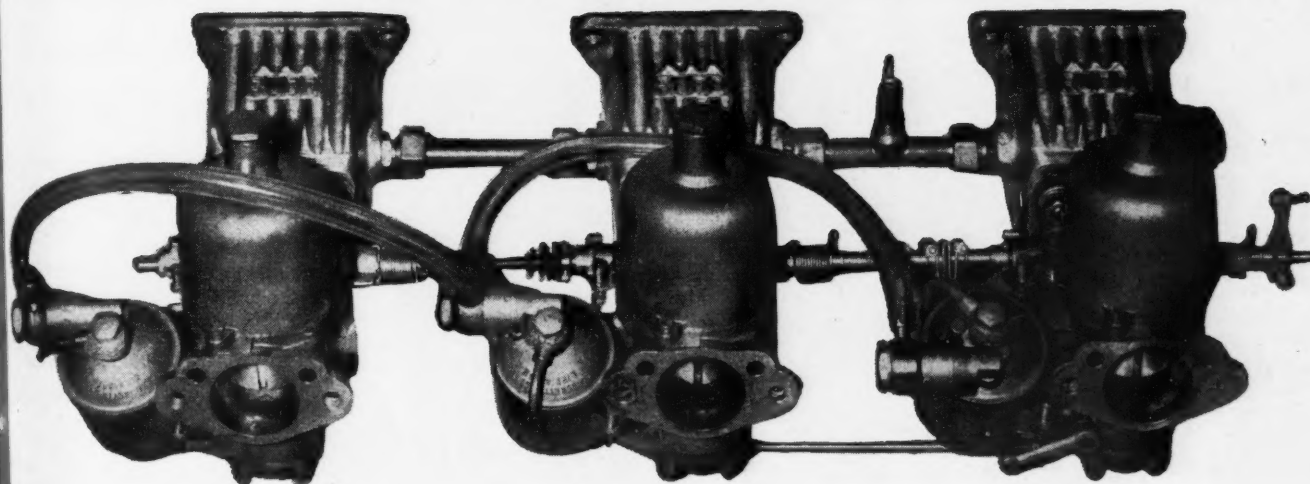
deficiency in the 3000's range of driving positions. The BN7, of course, lacks a telescopic steering column, and with the seat set far enough back for comfortable arm reach a driver of average build finds himself short on leg length. Incidentally, medium-height drivers can't easily see over the steering wheel, and the seat has no vertical adjustment, only fore-and-aft. Rudd's brake and clutch pedal pads are bolt-on fittings and do their dual job very well, with the reservation that the brake pad still doesn't give a lineup permitting heel-and-toe gear changes. The alteration to the throttle consists of welding an extra section onto the arc of the standard pad; this gives an ampler foothold and also provides a built-in stop at the full-noise position, relieving the linkages of brunts they shouldn't be expected to bear.

In upping the output of the C-series engine from 130 to nearly 180 bhp—in fact an actual 180 if the shorter, freer and doubtlessly ruder exhaust system is specified—the Ruddspeeders might be supposed to have turned over a new leaf to end new leaves. But this, says Ken Rudd, is not necessarily so. On paper, or maybe only in their heads, they have conceived further tuning stages, mainly matters



Rudd-converted Healey sports third SU carburetor and special finned aluminum manifold.

The Managing Director of K. N. Rudd Engineering smiles his satisfaction after a trial run in a Rudd-prepared A-H 3000. His back-room boys have increased horsepower from a stock 130 to 178.



Three SU HD6 carburetors are mounted on separate stub manifolds machined from aluminum casting. Copper tubing joins all three stubs to balance intake. All three SUs are run sans silencers and filters due to lack of room under fender. Author May reports, however, that they are not terribly noisy.

of cam form, conservatively calculated to lift the bhp ceiling above two centuries. This becomes more feasible than it sounds when we add that the current Rudd camshaft gives no increase in valve lift. But it's emphasized that the reliability factor at upwards of 180 horsepower would be conjectural, and the requisite practical development work has not yet been essayed and won't be in the foreseeable future.

#### DELIVERY AND PRICES

As far as the U.S. market is concerned, Rudd has two types of customers in view. If for instance you're planning to buy a new 3000 through normal trade channels, you can specify the Ruddspeed treatments—as many or as few as you please—when placing your order. When this is received at BMC, the car is built to stock specification, turned over to Rudd's firm for modification, returned to BMC, finally shipped to your U.S. dealer. In such a case there is no direct transaction between you and Rudd, though he does pride himself—and this can be important—on dealing scrupulously and punctually with epistolic queries from users of his products in all parts of the world.

If on the other hand you already own a 3000 and aspire to extra poop, you write directly to K. N. Rudd (Engineers) Ltd., High Street, Worthing, Sussex, England, state your exact requirements and solicit quotations. Distances from port of entry to ultimate destination introduce a considerable variable, so it's difficult to simplify the cost factor adequately. As a rough guide, though, the basic price of the three special intake manifolds, one additional SU to supplement an existing pair of carbs, and all the necessary control apparatus, is approximately \$105.00; Rudd camshaft, \$50.00; hard front springs and shocks to match, \$58.00; Mot-A-Vac brake servo unit and pipework, around \$40.00. If you buy the camshaft or the gasworks set, something that comes for free is a drawing and a detailed sheet of instructions for modifying the head and porting to Rudd's recipe.

#### WHAT IT WILL DO

In road performance language, the improvement wrought by the protraction of the Ruddspeed Healey's power curve is what you'd expect. When you hit the throttle at anything above about 3000 rpm, things really happen. The

(Continued on page 82)





## UNCOVERING CONRERO

by Jesse Alexander

Meet the Latin with the  
legerdemain that's  
necessary to find any  
and all power overlooked  
by the Alfa factory.

Conrero (dark glasses) waits  
nervously for his driver to  
settle down in the new 1100  
before the start of the Targa.

► Own an Alfa Giulietta? If you live anywhere near Turin, Italy, the man to see to make it go is Virgilio Conrero, a handsome silver-maned "Torinese" who might look more at home on the operatic stage than under a Giulietta's hood. Conrero's name, synonymous with getting the most out of the automobile, is known throughout Europe among Giulietta owners. Mail from North America constantly crosses his desk, inquiring about speed secrets or how much Conrero would charge to build a Formula Junior.

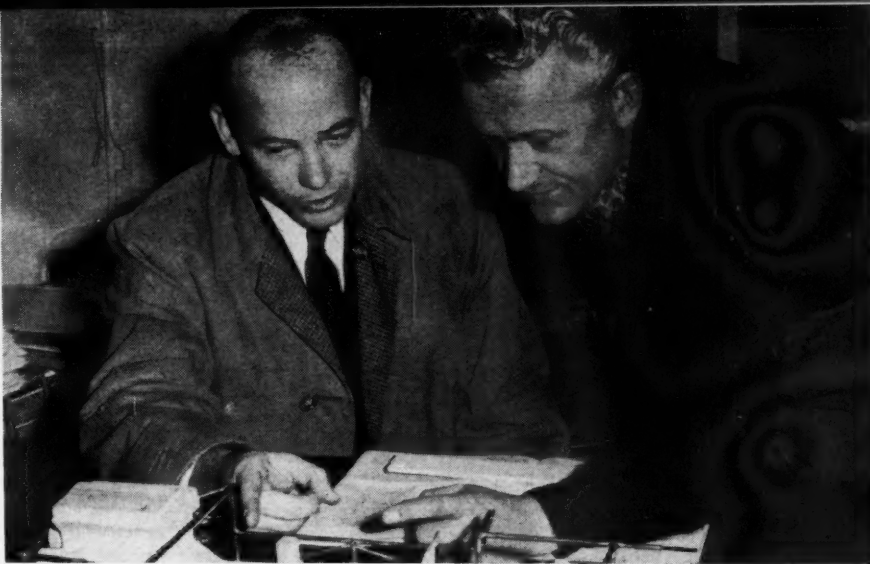
His shop is not easy to find, despite the fact that it's located near Turin's main railroad station. Like most such places in Italy, it's as unobtrusive as possible. The neighbors, however, are very aware of the "speed shop" and their constant complaints may force Conrero to move from Via Madama Christina 118. In the meantime, he does all his work, experimental and otherwise, within the same four walls. Here, in limited quarters, are facilities for dyno testing and space for several cars to be in for service at the same time. Under dust sheets in various corners are new or unfinished projects, ranging from a 2-liter sports car to Formula 2 and Formula Junior machines. Just off the main garage is his combined office and drafting room.

Conrero was born on January 1, 1918, and grew up in Turin. Attracted first to aviation, at the age of 16 he left school for a job in Fiat's aircraft engine division. War intervened, and he was forced to break off from Fiat after he had worked his way into a desirable position in the testing department. Three years later, however, Virgilio was back at work in his old job until 1945.

With the coming of peace to Italy, Conrero was one of the many who were willing to do anything if it meant they would have at least one meal a day; for him it was bicycle repairing, nine months' worth, until he was able to find work as a truck mechanic. Until this time, Conrero points out, he had never paid much attention to any kind of automotive transport; cars had never been able to replace his interest in aviation. But the Italian aviation industry was down and out for the count. Conrero could see that the automobile was a much more sensible line of work, at least for the foreseeable future, and so it was that this super-Alfa-tuner took his apprenticeship on diesels!

In '48 an old friend, Savonuzzi (now on Chrysler's engineering staff) interested Conrero in helping with the construction of a single-seater racing car powered by a Shorrock-supercharged 820 cc four giving 155 bhp at 8200 rpm. Called the S.V.A., this de Dion-reared car was completed but it died on the toolroom floor due to lack of funds.

By '51, Conrero was ready to start out



SCI's European Editor Jesse Alexander and master Alfa tuner Virgilio Conrero compare scale chassis model of his latest 1100 cc sports-racer with LaTourette's Asardo cutaway in an October '59 issue.

on his own, and opened a one-man operation at number 52 Via Mon Basilio in Turin. Simple repairs were the principal projects but soon Conrero decided to try improving the performance of his customers' cars. In 1953, Savonuzzi (and Ghia) again appeared to design a body for Conrero's first car, the Conrero 2000, which combined a 1900 Alfa engine with a special Lancia-based Conrero chassis. 132 bhp were extractable in those days while today the standard 2-liter Alfa is rated at 105 bhp.

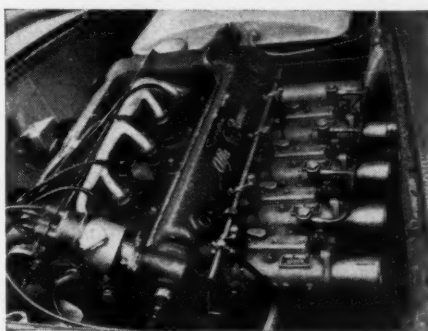
Next on the list was a 161-bhp "Barchetta" sports car, with a 1900 Alfa

there were 84 wins all over the world. By careful attention to every detail — by setting certain standards of operation and by recruiting one or two first-class mechanics — Conrero has built up an enviable reputation. Speed secrets are nil; there's only so much one can do to a 1300 cc Giulietta and Conrero's men know them all.

Besides Giulietta tuning, Conrero has found time to tinker with Renault 4CV's and Dauphines, and Peugeot 403's. A Fiat 1100 for Formula Junior is ready now, with 84 bhp on tap at 6000 rpm. Conrero Sprint Veloces are rated at 127 bhp at 7200 rpm, while the normal TI can be made to give 102 at 7000 rpm. Slowly coming to fruition is a 2-liter sports Alfa engine with twin ignition, offering 172 bhp at 6200 rpm. And seen in the 1960 Targa Florio was an 1100 cc Giulietta-powered sports car with a tubular space-frame and independent rear suspension.

Yet another Conrero project takes a serious step into Grand Prix racing. Enlarged to 1470 cc, a Giulietta engine has delivered 143 bhp at 6800, with a maximum torque at 5500 and a possible rev peak of 7500. Mounted in a Cooper chassis, this plant propelled Van der Vyver to a third place in the Formula 2 South African G.P. last January first. One Italian magazine feels this is a Conrero cover-up for Alfa Romeo's interest in the 1961 Formula 1.

One thing is obvious, the man's busy. He enviously eyes the Abarth operation across town, but is convinced that such a large business is just not in the cards. Conrero prefers to do as much as he can as thoroughly and as carefully as possible — always concentrating on keeping the client satisfied. Here is the secret of Conrero's success: careful attention to detail coupled with a personal interest in every car that comes in the garage. That's what keeps Conrero Alfas winning one race after another. —JLA

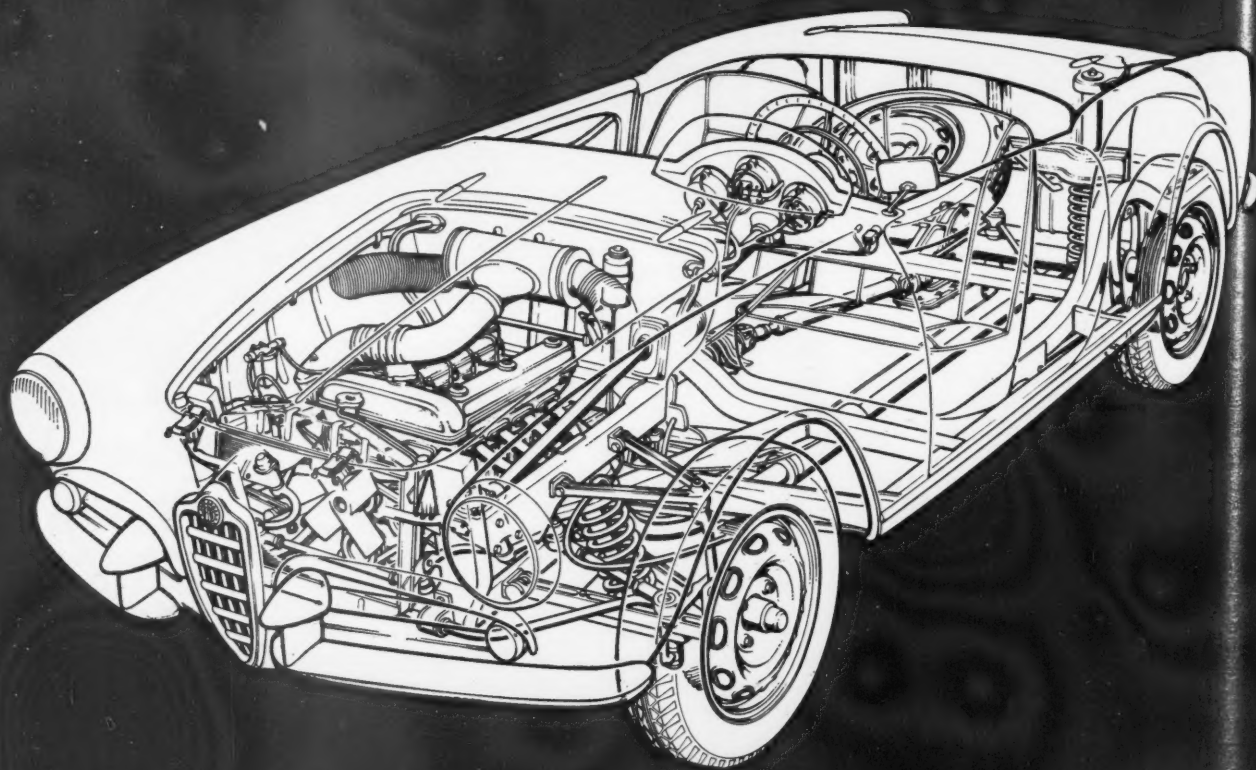


This early Conrero engine was based on the DOC 1900 Alfa engine. It produced 132 horsepower.

engine fitted with a twin-plug head. Conrero feels that dual ignition has a place on larger-displacement engines but that on anything less than one and a half liters it's hard to justify. Completely sold on disc brakes, he's trying hard to line up a conversion for standard Giuliettas despite their superb stock drum brakes.

With the coming of the Giulietta, Conrero was quick to decide that specializing in "souping" this engine would not be a bad proposition. Since then the successes of Conrero-modified Alfas have been multiplying each year: 28 victories in 1957, 67 in '58, and in 1959



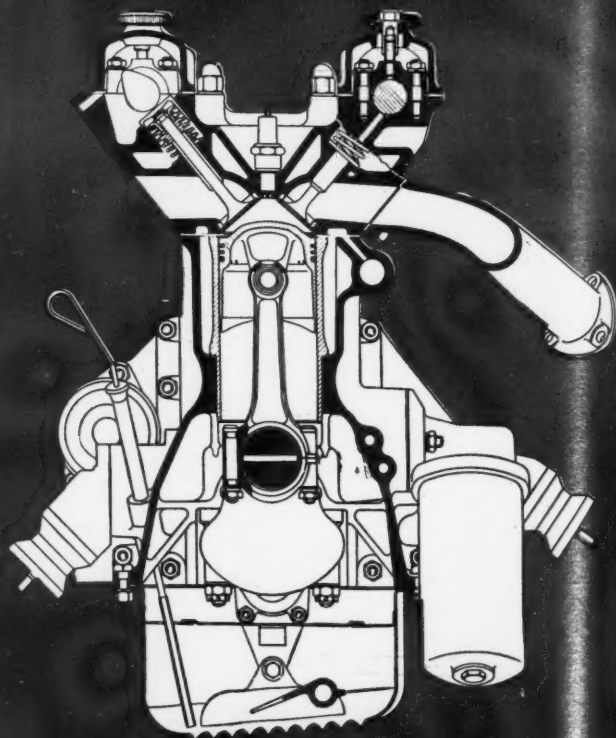


## COMPETITION TUNING: ALFA SUPER SPIDER

by Tom O'Brien

Are Alfas on their way out of the winners' lists thanks to the SCCA's new performance categories? The answer is a resounding "No," but you Veloce drivers may stand a better chance of dusting off the big-bore machinery by "prordifying" your cars.

3. With the engine out of the car and disassembled, the first step is to take a light cut (.005 inches) on the last ground sealing surface of the block. Removing any more will probably require measurement of one cylinder head to avoid distortion of the block. The next is the block, the first step project above the block setting up to .005 inch. Check the bottom of the block in place. No other block refinements are required, but a word of caution: had a machine shop that's interested in doing a good job. This is essential since some effort must be expended to get the relatively soft liners square with the surface to be ground. The next step is to bore the liners to the .005 inch piston skirt clearance at room temperature. Since Alfa pistons don't have expansion control inserts, you can count on the pistons swelling as the engine warms up. Don't be alarmed by the apparent loose fit of the pistons in the liners, but keep it in mind as you resist the temptation to rev high with a cold engine.



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► How are the Alfa Veloces going to stack up against two-liter machinery in the SCCA's 1960 performance Class E when the record books are closed at the end of the year? At this point it's a moot question, but it's a tribute to the real performance of the Alfa that it's been placed in direct competition against such bigger-displacement machinery as the Porsche Supers, the Triumphs, the Healeys and the new Daimler 250's. Winning in an Alfa may no longer be the foregone conclusion it was under the old classification and the competition can be expected to be just as fierce next year.

There is a substitute for cubic inches however—at least as far as production class racing is concerned. To be in the running, Alfas have to be "prodfied," that is, tuned and worked over to the hilt—within stock limitations. The 1290 cc Super Spider engine, built mostly of aluminum, is rated at 103 bhp in stock form. That's 1.3 horsepower per cubic inch, a respectable figure in anybody's book. However, the engine does have its faults and compromises which must be taken into account in preparing it for production racing, to ensure that all those horses are pulling for you, but without sacrificing reliability and flexibility.

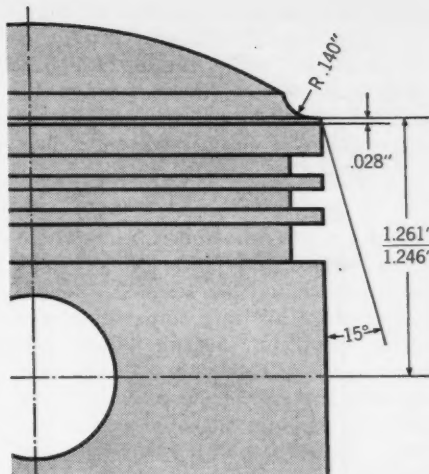
Commonly known as "Sebring specifications," these Alfa urgings may be expected to result in about 110 or 112 bhp. Their main area of attention is in valve timing. The piston grooving, which results in a lowered compression ratio, is counteracted by milling of the block and head to regain a 9.5 to 1 compression ratio. Since engines vary, even off production lines, use caution in the milling and don't exceed cuts totaling .030 inches between the head and the block.

#### SHORT-COURSE TUNING

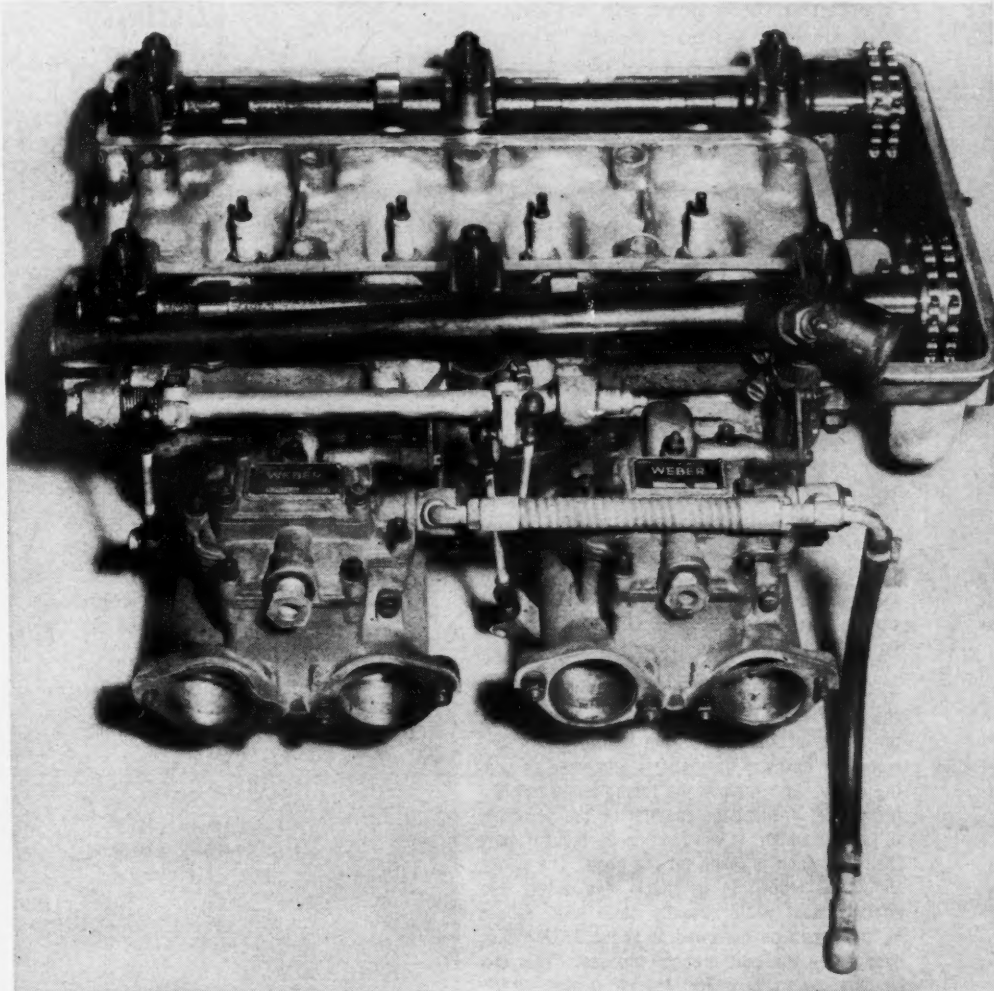
Tuning the Alfa for racing depends largely on the nature of the race. Each course may require different combinations of valve timing, carburetion and the like. On a short course, that is, one with a short straightaway, what's needed is a low gear ratio and good mid-range power. Try setting the ignition at 47° at 6000 rpm. Blip the engine to 7000 to be sure 47° is not exceeded. Small carburetor venturis for good low-speed characteristics are also in order.

The 4.1 rear-end ratio found on the stock Veloces is usually too high for most courses, while the Giulietta's 4.55 cogs are often just right. If after fitting a 4.55 set you find you need a higher rear-end ratio, tires of a larger circumference may be used. The 155 x 15 Pirelli Cinturatos that come with the car have a low profile so 5.00 x 15's with the 4.55 rear end may be just right, because of their greater rolling distance per revolution. The Cinturatos check

2. The pistons should be grooved as shown on the right, to keep them from striking the head in the event of con rod stretching at high revs. To prevent the top piston ring land from becoming the thrust surface when the piston "rocks" in the bore, the lands must be turned down at least .020 inch smaller than the bore. If this is not done, the top ring land will smear into the top ring groove, preventing the ring from effecting a good seal. After machining, radius all sharp edges. The final step in preparing the block assembly is to have the crankshaft, connecting rods and new connecting rod bolts magnafluxed. Along with the pistons, piston rings, flywheel and clutch pressure plate, they should be statically and dynamically balanced. The engine preparation described here was done by Competition Services in Paterson, New Jersey. The balancing and magnafluxing were carried out by Dick Simonek, East 29th Street in Paterson.



PHOTOGRAPHY: TYPOND



3. The Alfa's high horsepower-per-cubic-inch figure is for the most part due to its excellent breathing. Any improvements in this area should result in bettered performance, especially over 5000 rpm. First carefully match the ports in the intake manifold and the head. The ports should be polished, but not greatly enlarged. No major changes are called for in the carburetion-exhaust systems, but careful modifications may result in performance gains. A word to the wise: there is far more to be lost than gained. The Weber 40DC03 carbs on the Veloce are equipped with 28 mm venturis. Larger (30 and 32 mm) venturis can be used, reducing venturi pressure loss at high speeds, provided you open up the exhaust system. Cut out the large muffler, replacing it with a piece of straight pipe, but leaving both resonators in place. The car can still be driven on the street if a "racket-buster" and a little discretion are used. Be sure your carbs are the latest type. There should be two 7 mm diameter holes drilled through the bowl cover, visible when the jet cover plate is removed. If you have the older type, the holes will be 4 mm, but they can be drilled out to 7 mm. The change was effected on engines starting with No. 30831 and on some between 30775 and 30821. The letter "M" may be found on the cover to indicate the carb was modified during production at the factory.



out at 75½ inches per revolution. Dunlop R-5 5.00 x 15's measure 77¾ inches per revolution while Dunlop R-3 5.50 x 15's come to 81¾ inches per revolution. Another 5.00 x 15 you might want to investigate is the Goodyear model.

#### LONGER TRACKS

On longer circuits and in cases where engine reliability is a factor, a higher gear ratio should be selected. Larger tires may be an easy solution to the gearing problem. Set the spark advance at 44° at 6000 rpm. If there are long straights, larger venturis may be tried, but be sure that the power loss coming out of the slow turns does not offset any high-speed gains. A point to remember is that you are looking for the lowest possible lap times, not just the fastest speed down the straights.

Carburetor venturis should be chosen to suit the course and jets chosen to suit both the venturis and the weather. Larger venturi areas require exactly proportionally larger main jets, at least over the narrow range we're concerned with. Since the Weber has a high-speed enriching device operated by main venturi vacuum, it may be necessary to use a richer (smaller number) air correction jet to get the correct high-speed mixture when using larger venturis. Remember, colder weather requires richer jets; humid weather, leaner jets. An exhaust analyzer is undoubtedly the answer for on-the-money carburetion. At any rate, use one of the "super premium" fuels.

A word about ignition. The Marelli distributor is basically a good system; it can be spun to higher proportional rpm than the engine will deliver, without point bounce, and the coil voltage is sufficiently high, but there are two

easily-cured drawbacks. The most serious is the lack of a bushing between the distributor shaft and body which in a short time permits the shaft to gall and wobble, causing erratic firing. If unchecked, the shaft may seize, bending the oil pickup drive in the process. Have the distributor bushed by a competent machine shop, preferably when the unit is new. The second problem is crossfire. Separate all high-tension leads from each other for their entire length and be sure the top surface of the coil is kept clean to prevent shorting at that point. Regarding spark plugs, try starting with a set of KLG 220's. Used with a set of warm-up plugs (such as Champion N-5's) we found they would almost never foul. A few hard practice laps should show if a colder plug is needed.

#### DRIVING AND MAINTENANCE

There are as many opinions on how high to rev the Veloce as there are drivers. The factory red-lines the tachometer at 6800 rpm. Audible valve float occurs at 7700 with anything less than brand-new valve springs. The maximum safe piston speed is generally agreed to be 4000 feet per minute and it occurs at 8000. Take your pick. Shifting out of second at 7250 puts you at 5000 in third—to go beyond this would seem foolish.

It's difficult to determine how often a competition engine should be overhauled. Rather than effect a complete tear-down and rebuilding after a given number of miles or hours, a four-point maintenance plan might be followed:

1. After each race, give the engine a complete and thorough tune. Check and record the compression reading of each cylinder and adjust the valve clearances.

2. After every third race, remove the oil pan and inspect the bearings. Replace any having a copper-like hue. If any bad bearings are found, check out the crankshaft with a micrometer. This latter inspection should be carried out after every exceptionally long or grueling race, or if anything is suspect in the lower end.
3. At least after every fifth race, and more often if possible, a complete valve job, including inspection of valve springs for weakness, should be undertaken. Decarbonizing can almost always be counted on to revitalize engine performance.
4. About midseason, install a new set of piston rings. Don't depend solely on the compression gauge to tell you when they're needed. If your engine just doesn't have it, even after a valve job, broken or tired rings are probably the reason. Piston ring failure occurs in a high-revving engine like the Alfa more often than you might expect. While the con rods are out of the engine, have them magnafluxed and replace the con rod bolts.

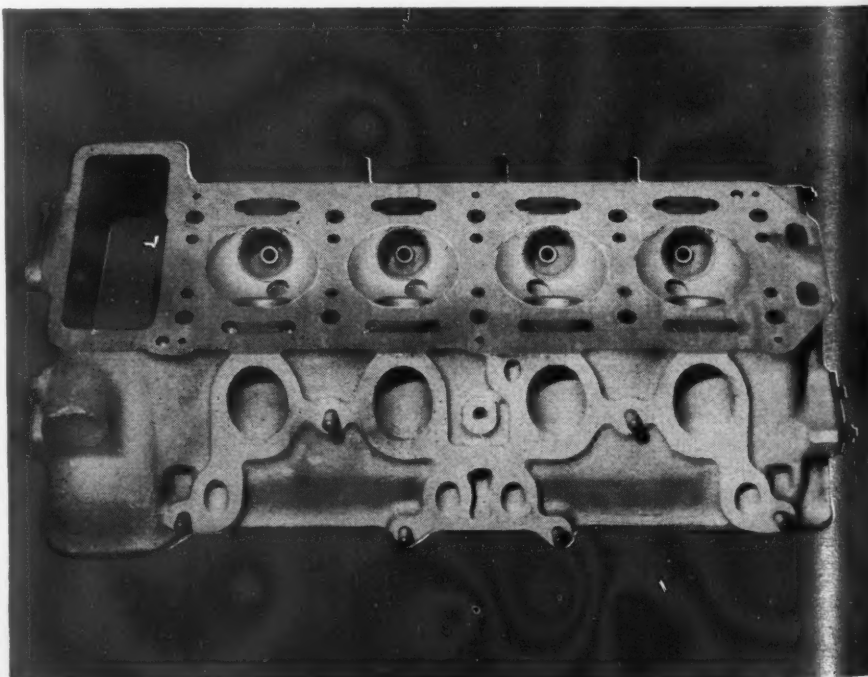
The Super Spider has an impressive competition record and is an excellent road car. To keep it winning and pleasurable to drive, however, three things are necessary: good preparation, thorough maintenance and sensible driving.

*Tom O'Brien, the author of this story, will do his best to reply to any inquiries about "prodigying" the Alfa. You may write him at Competition Services, 99 Cross Street, Paterson, New Jersey. The estimated cost for the work described in the article is between \$400 and \$600, depending on the condition of the engine and the garage employed.*

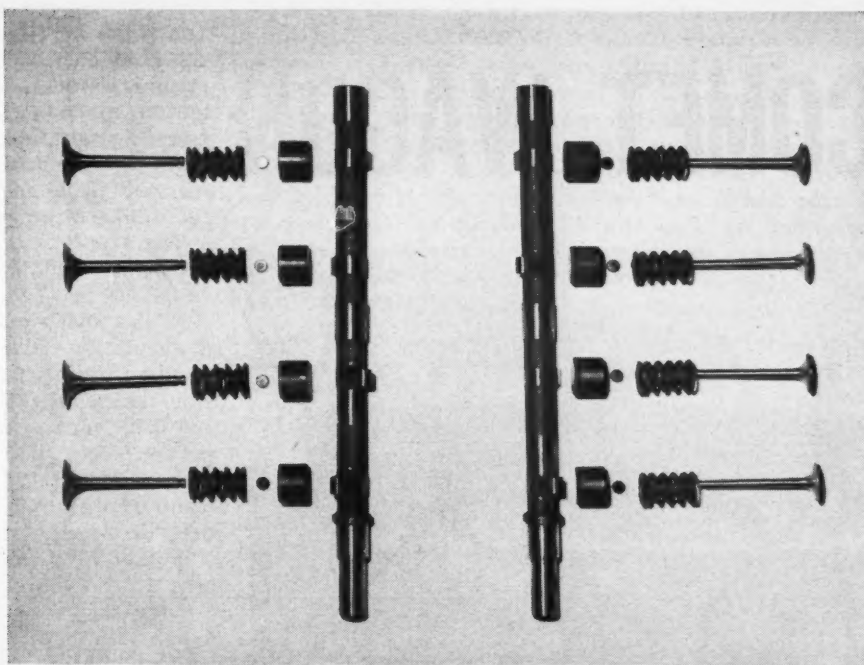
4. To prepare the head for surfacing, remove the lower row of exhaust manifold studs (shown projecting at the top of the photo). They will come out easily if the head is immersed in boiling water. Also remove the timing chain tensioning device. Inspect the chamfer on the periphery of each chamber; it will have to be recut if more than .015 inch is taken off the head. The valves should be lapped in to check seat width. The effective seat width, usually quite wide (about ½-inch), can be narrowed to about 3/32 inches by opening the port area of the seat. This can be done by using a 70° reamer piloted in the valve guide. In addition to aiding gas flow, this will increase contact pressure between the valve and seat and tend to discourage carbon build-up. Before installing the valves in the head, check all springs for free length and force compressed. The readings should be as follows:

Outer: Free	43.0	44.6	mm
Compressed	24-25	kg	22.5
Inner: Free	39.35	40.95	mm
Compressed	14-15	kg	21.0

Alfa springs may lose their strength quickly and need to be replaced often. Checking the free length usually uncovers the offenders. Don't try to increase pressure by putting shims under the springs; this will only result in coil bottoming.



5. The straightforward Alfa cam and valve layout is shown right. After installing them in the head, check valve clearances with a feeler gauge. Exhaust valves should be set at .020—.021 inches and the intakes at .015 to .016 inches. By setting the valves .002 to .003 inches tighter, a noticeable increase can be had above 6000 rpm if the straight exhaust and larger venturis are used. But here is where it's possible to go astray, since the engine will fall flat on its face between 4000 and 4800 rpm. This isn't a problem in first or second gear since the car accelerates through this range rather quickly, but the lack of engine flexibility may be a drawback on some courses since it will compound transmission ratio faults. Fourth gear at 4800 rpm is equivalent to 6480 in third—no problem here. But 4800 in third equals 6960 in second, resulting in a problem if there are any corners in that rpm range, and there seems to be an uncommon number of them on long courses where changing to a lower rear-end ratio would do more harm than good. By using larger venturis and straight exhaust and tightening the valves that extra .002 or .003 inches, you may find yourself sitting in a corner in third gear with your foot to the floor waiting for things to happen or over-revving in second, the penalty for increased top-end go.



6. In reassembling the engine, place strips of clay on the piston heads to check clearance of the cylinder head, turning the engine by hand. Minimum clearance is .060 inch. Use the shop manual as a guide and install new gaskets and seals throughout. Follow recommended torque settings and check main and connecting rod clearances and crankshaft end play. Use new lock tabs, bolts and nuts on the connecting rods. Probably the only chance for error in assembling the engine is in installing the connecting rods, which are not numbered like other parts and are not symmetrical. As a check after assembly, be sure the small ends of the rods are centered on their wrist pins.



7. The first step in timing the cams is to tense the upper timing chain. Using a screwdriver behind the tensioning sprocket, draw the chain taut and lock it in this position. The spring behind the sprocket is insufficient. The next step is to degree the cams. Remove the bolts in the vernier adjustments (shown above) and loosen the large bolt on the front of each cam. This will permit the cams to be rotated independently of the sprockets and chain drive, facilitating the timing operation. Valve timing for stock settings is as follows:

	Intake	Exhaust
Opens	34° BTDC	63° BBDC
Closes	63° ABDC	30° ATDC

Make sure the clearances are set right, since minor variations here result in large changes in valve timing. For those who want to get blazing top-end performance, the Sebring timing specifications might be tried. They have a whopping 80° overlap compared with 64° for the stock settings, but they're very hard to set exactly right:

	Intake	Exhaust
Opens	46° BTDC	65° BBDC
Closes	65° ABDC	34° ATDC



# COMET WAGON



Simple front end of the Comet is in the rapidly-building U. S. compact car tradition. New wagon shares body parts with the less-costly Falcon.



The Comet wagon boasts 76.2 cubic feet of cargo room. Usable space is 27 inches high and 106 inches long—with back seat and tailgate down.

► Ford Motor Company's Lincoln-Mercury Division has a winner in the Comet. In the first six weeks' retail selling, about 28,500 Comets were delivered to customers. In industry history, this success is second only to FoMoCo's Ford Falcon.

The Comet at mid-spring was rapidly catching up to the Valiant, which in turn was breathing down Corvair's neck. Ford Division's Falcon was still way out in front but at the expense of the regular-sized Ford line, while long-suffering L-M dealers gleefully reported that the Comet was drawing into their showrooms customers who *could* be upgraded to Mercurys and Lincolns.

What is the Comet's appeal? Comet advertising claims "big car styling," "longer wheelbase" and "luxury appointments," all at compact car price and economy. Long lines of Comet customers would seem to testify to the accuracy of the market researchers' pin-pointing.

## SIBLING STATUS

We found the design integration of the Comet and Falcon

very like the examples set by our English cousins at Rootes and BMC. Let's face it: the Comet is a mechanical twin to the Ford Falcon. The looks of the Comet, you might say, are only skin deep. The Comet sedan wheelbase is 41½ inches greater, providing more trunk room but equal legroom. Overall weight and length are up accordingly and bumpers, grille, front and rear quarter panels, hood, deck, trunk, instrument panel and greenhouse are different. The like and the unlike blend remarkably.

The Comet station wagon is even more like the Falcon, sharing its 109½-inch wheelbase and rear fender contours. In fact, its rear end differs only in tail-lights and bumpers.

As the Comet matures, it is developing its own character mechanically. First change was an automatic choke as standard equipment (the Falcon has a manual one). Reportedly, the engine's stroke will be lengthened slightly to obtain 170 cubic inches (the Falcon's 144). This move is not expected before the 1961 models and otherwise the engines will be identical, with cast-iron block, integral head and manifold with overhead valves and six still-oversquare cylinders, despite the stroked crankshaft.

In the November, 1959 issue, SCI presented a road test of a Falcon four-door sedan with automatic transmission. For the Comet test, we therefore chose a two-door station wagon with manual transmission. With the exception of the trim and sheet metal variations, what we say about the Comet wagon applies equally to the Falcon wagon.

## THE COMET COUP

The secret of the Comet's success is its price. The four-door Comet sedan and station wagon at \$2053 and \$2365 retail are priced identically to the basic Valiant V-100 models, and only \$85 more than stripped Falcon models. But the Comet comes with deluxe trim that's extra on the others.

Lincoln-Mercury Division makes no bones about the fact that it offers little more than a dressed-up Falcon. Why should it? Since the war, dressed-up, deluxe models have taken over the lion's share of the market. The consuming public may be rebelling against size, but there's no sign they're down on prestige or luxury.

Here's what the Comet offers as standard equipment: dual horns, dual sun visors, four headlights, front and rear armrests, cigarette lighter, deluxe steering wheel and horn ring, automatic courtesy lights, automatic choke, foam rubber seat pads in front, vinyl (rather than cloth) headliner, and more brightwork inside and out. To get a Falcon, Lark or Corvair so equipped, you'd have to pay \$65 to \$150 more than the "basic." So, if you want such "extras," the Comet's a good buy.

The Comet we tested, a stripped-to-the bone, fire-engine-red, two-door wagon, carried a suggested retail price of \$2310, plus transportation. Its only extras were a \$74.30 heater, windshield washers for \$13.70 and an outside rear view mirror.

## AN EARLY EXAMPLE

Brand spanking new when we picked it up, SCI's Red Demon was one of the first Comets or small wagons off the line in February. As a result, it had some shortcomings which we hope will not appear generally on later ones.

The first thing you notice about the Comet—as with the Falcon—is that it is attractively and simply styled and carefully assembled, inside and out. Door fittings and trim are neat, welds are clean and the sheet metal shows no ripples. Even more than on the Falcon, the upholstery is very luxurious-looking.

Like most new cars, the Comet was quite stiff when we started out—particularly the clutch and the column-mounted shift lever. After 500 miles of urban, suburban, expressway and back-country-road driving, everything was nicely loosened up—to the extent that annoying squeaks had developed in the instrument panel around the glove box door and between the chromed instrument cluster housing and the dashboard, not to mention the expected tailgate and

window torture strains so usual in station wagons.

Examination of the glove box door showed the red paint wearing through where it had rubbed against the panel. There was no evidence of primer. When we asked a top Ford manufacturing executive about this oversight, he expressed surprise, gave a dirty look to an assistant, and insisted this wasn't within specifications. We suspect glove box doors in Comets are now *all* primed.

#### ROOM FOR ROAMIN'

The Comet wagon's 76.2 cubic feet of cargo space is, according to Lincoln-Mercury public relations, more than that of the 1956 Ford wagon. It is also more than the Valiant wagon's 72 feet, but considerably less than the Studebaker Lark or the Peugeot. Don't forget, though, that the latter two have a good portion of that volume up high, where it may restrict vision. The crank-down window in the tailgate has finally been accepted by Ford in the Comet and Falcon, an improvement over the split, lift type. Door handles and window cranks, placed so they won't catch clothes, work with easy, positive action.

For those who care, we measured the Comet cargo space. Width is 45½ inches at tailgate bottom, 43½ at tailgate top, 47½ at spare wheel, 42 at rear wheel wells, and 56½ at front door. Height is 27 inches at tailgate, 31½ inches inside. Length is 106 inches with gate and rear seat down, 84 with gate up and 50½ with seat up too. That seems like plenty of room, but if it isn't, a roof-rack is available for \$35.10.

#### HANDLING

The Comet wagon is a pleasant vehicle to drive as long as you are on good road surfaces. It's typically American, soft, comfy and not for sporting types at all. For the suburban set, this is quite all right. But on uneven, badly potted, winding trails, it speaks defiance with body squeaks and groans. It shakes, twists and bumps, trying bronco-like

to throw the driver. Since Ford pioneered the station wagon, it's disappointing that one of their latest should be so lacking in the traditional go-anywhere utility of its predecessors.

The drive train is noisy, which seems typical of the Falcon-Comet series. The best improvement Ford Motor Co. could make for 1961 is rigid attention to noise suppression.

We thought the wagon inferior to the Comet sedan in both ride and control over rough surfaces. While part of this may be due to the sedan's longer wheelbase and softer spring rate, neither explains strong road shocks which were transmitted through the steering wheel of the wagon tested.

#### PERFORMANCE WITH DIGNITY

Acceleration is indifferent, though better than the poorly-tuned Falcon tested previously. Since the oversquare engine on this car would not lug well, judicious use of the gears was called for. Only very gentle nursing will keep the Comet from bucking and vibrating if you try to accelerate in high gear under 20 mph. We found the best shift points for ordinary driving were at 15 and 30. For maximum pick-up, it seemed best to shift at 28 and 40, which in both cases is before the power peak (4200 rpm).

#### RESPECTABLE ECONOMY

On a hard-driving, cross-state excursion over a variety of roads and driving conditions, the Comet gave 24 miles per gallon. After the engine is broken in, and with an "easier" driving technique, the advertised claim of 28 mpg should not be difficult to attain at moderate highway speeds. Indicated traffic mileage is around 19.

The Comet (and Falcon) wagon presents a good buy as a family utility car. It is well appointed, comfortable, roomy, and handles well on civilized roads. A reasonable compromise is reached in performance, economy and size. Shortcomings in noise control and rough roadholding should be corrected by the manufacturer.

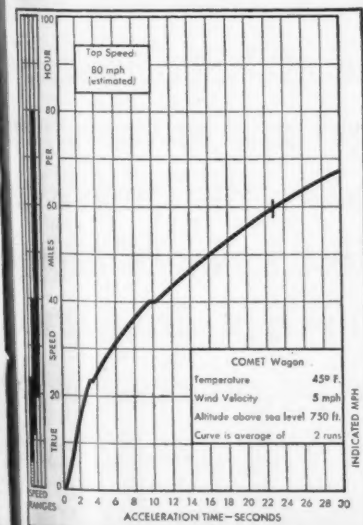
—Mike Davis

## ROAD TEST

### COMET WAGON

Price as tested: \$2384

Manufacturer: Lincoln-Mercury Division  
Ford Motor Company  
Dearborn, Michigan



#### ENGINE:

Displacement .... 144.3 cu in, 2365 cc  
Dimensions .... Six cyl, 3.50 x 2.50 in  
Compression Ratio ..... 8.7 to one  
Power (SAE) ... 90 bhp @ 4200 rpm  
Torque ..... 138 lb-ft @ 2000 rpm  
Usable rpm Range .... 1000-4200 rpm  
Piston Speed ÷ V/s/b  
@ rated power ..... 2070 ft/min  
Fuel Recommended ..... Regular  
Mileage ..... 19-28 mpg  
Range ..... 265-390 miles

#### CHASSIS:

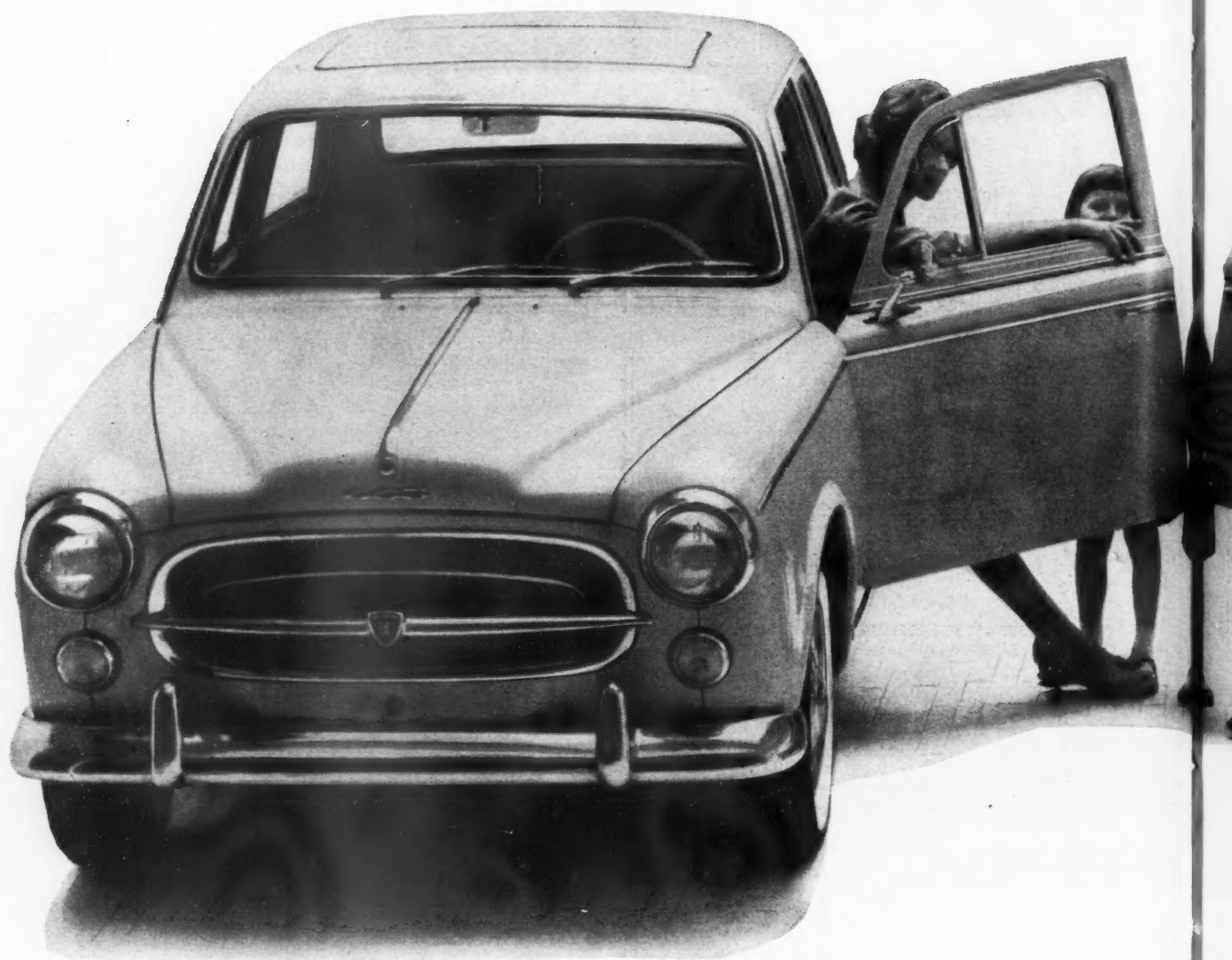
Wheelbase ..... 109½ in  
Tread, F, R ..... 55, 54½ in  
Length ..... 192 in  
Suspension: F, ind., coil, wishbone,  
lower arm, anti-roll bar; R, rigid  
axle, leaf springs.  
Turns to Full Lock ..... 2.3  
Tire Size ..... 6.00 x 13  
Swept Braking Area ..... 212 sq in  
Curb Weight (full tank) ... 2655 lbs  
Percentage on Driving Wheels .. 51%  
Test Weight ..... 2860 lbs

#### DRIVE TRAIN:

Gear	Synchro?	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	4.46		15.88	4.2
1st	No	3.29	88%	11.71	5.7
2nd	Yes	1.75	75%	6.23	10.8
3rd	Yes	1.00		3.56	18.8
Final Drive Ratios: 3.56 to one std, 3.89 optional.					



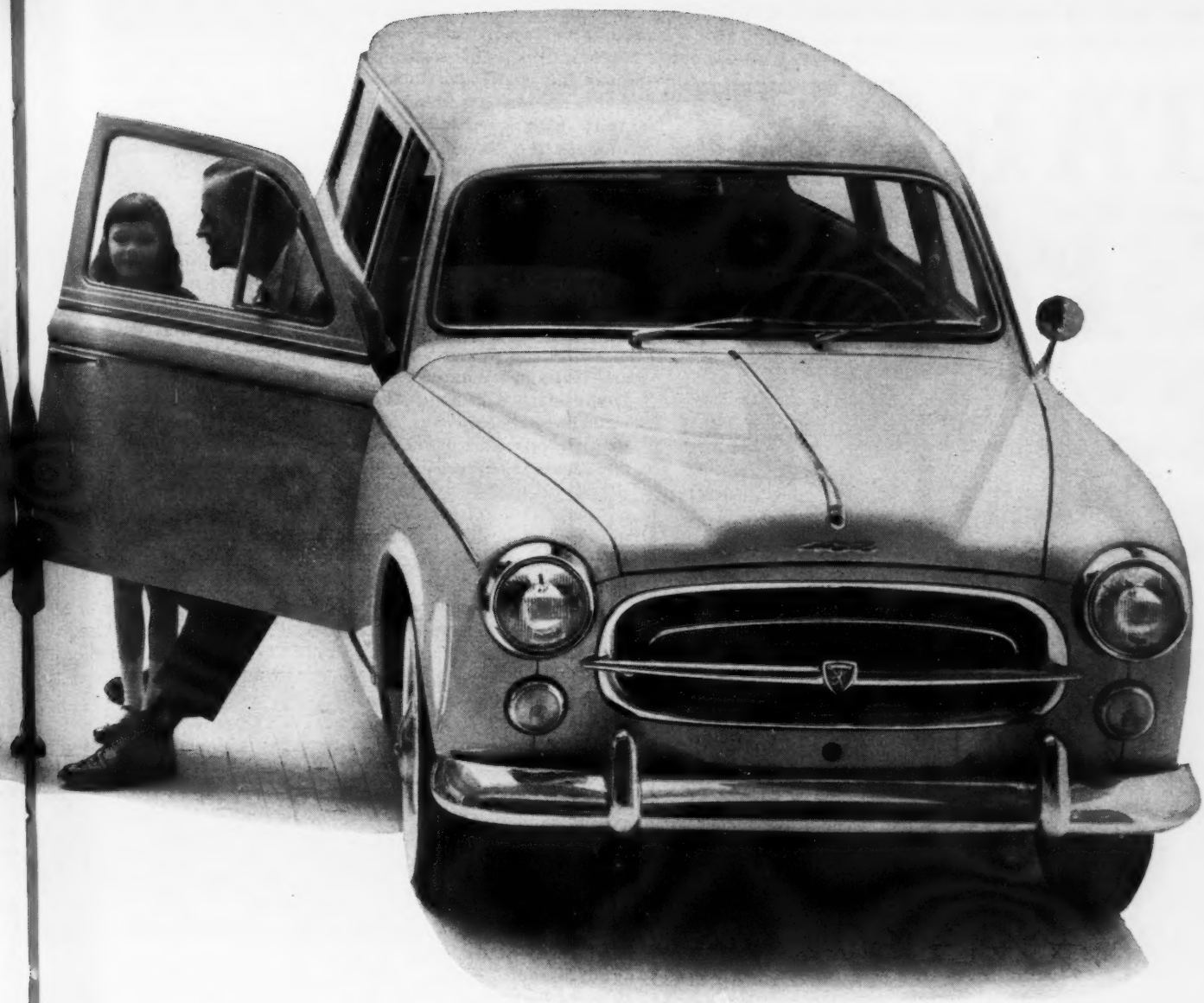





## Which Peugeot 4

When it becomes time to decide between the Sedan and (th  
Station Wagon, these facts will help. The 403 Sedan seats inc  
to 6 adults, delivers 30 mpg on regular gas and is very inex 4-  
pensive to maintain. It is a remarkably alert, responsive car def  
Owners say Peugeot gives them a long-lost sense of rapport ele  
with the road. ("You drive this car—it does not drive you." trin  
♣ The 403 Station Wagon delivers 28 mpg on regular gas  
It has more interior space than most other wagons—87 cu. ft.  
And the handy back door cannot be opened from the inside

There are over 500 Peugeot dealers throughout the U. S., Canada and Mexico. For dealer list or illustrated brochure on station wagon or sedan, write Peugeot.



g 403 for you?

an (the kids won't like this, but you will).  Standard equipment  
 ts includes: sliding sun-roof,\* whitewall or Michelin X\* tires,  
 nex 4-speed synchromesh transmission (overdrive), heater-  
 can defroster, cloth\* or leatherette upholstery, reclining-seats,  
 ppor electric clock, windshield washers, trip mileage counter, wheel  
 ou. trim rings\*, dual-tone horn, and an outside rear-view mirror.

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SEDAN \$2250  
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 and Gulf Coast P. O. E.

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Here is the fantastically complex vehicle that Donald Campbell will use in trying to reach his . . .

# TARGET SPEED 500!

by Harry Mundy



Donald Campbell has his eye on the records once held by his father. His aim: to be the fastest man in the world both on land and on water.

► Interest in the world's land speed record goes in cycles, and 1960 seems to be a year of revival. There are several American cars in preparation to attack this exotic goal. To meet this challenge, Donald Campbell has completed a new four-wheel-drive turbine-engined car—the Bluebird C.N.7. With its designed maximum speed of 500 mph, he hopes to increase the record already credited to Great Britain to over 400 mph in his first attempt.

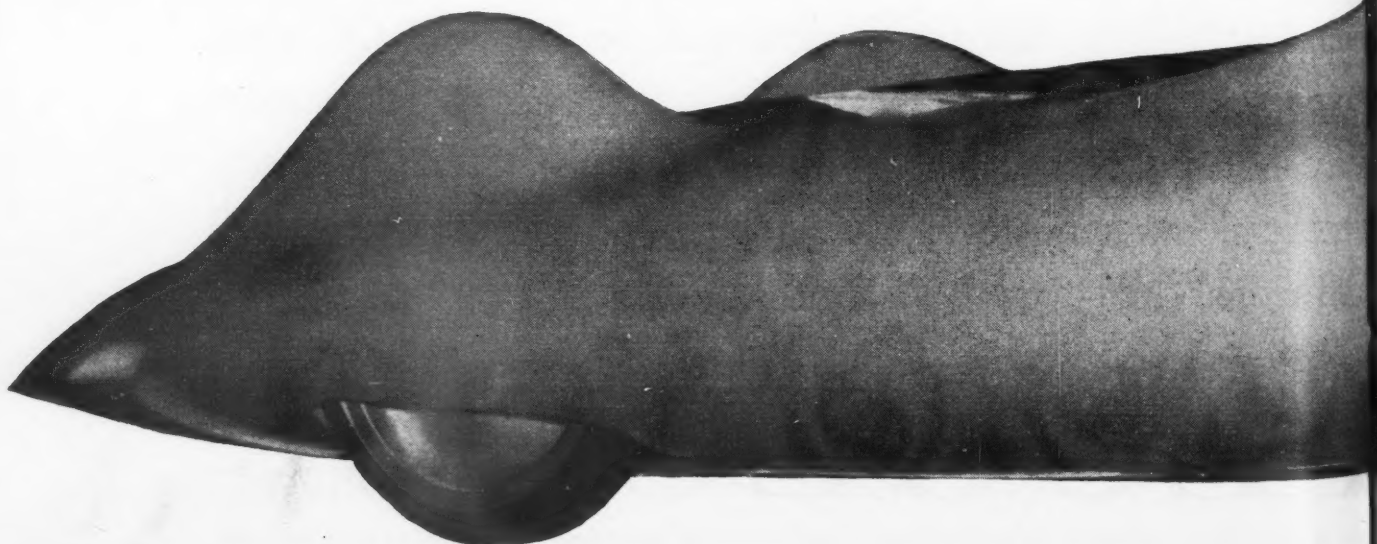
Great Britain has dominated the land speed record attempts since 1924; the record has been progressively raised from 146.01 mph to the present speed of 394.20 mph, established by the late John Cobb in 1947. One name has appeared in this list of records on no less than nine occasions—that of the late Sir Malcolm Campbell. He was the first man to travel on land at 150 mph and later at 300 mph; he was also the only man to hold both the land and water speed records simultaneously. Famed son of this famous father, Donald Campbell already holds the world water speed record and, in fact, has broken it on no fewer than six occasions in the past five years with the same boat, the Bluebird hydroplane. With this record and family tradition it is not surprising, therefore, that he has two unsatisfied ambitions: to reinstate the name of Campbell at the head of the list of land speed records, and to become the second person to hold both the land and water records.

## THE YOUNGER CAMPBELL

Donald Campbell is now the same age, 39, that his father was when Sir Malcolm took his first land speed record in 1924 on a Sunbeam at 146.16 mph. The younger Campbell joined the RAF as a pilot under training in 1939 but was discharged in 1940 as a result of strain caused by rheumatic fever contracted at school. When his father died in 1948, Campbell, then 27 and a partner in a firm making wood-working machine tools, decided to pursue his father's quest for distinction as the fastest man on earth. The decision was prompted in part by the announcement that Henry Kaiser had built a boat to try to claim Sir Malcolm's pre-war water speed record of 141.74 mph.

After several unsuccessful attempts with a prop-driven Bluebird, including hitting submerged debris when a record was all but certain, Campbell, in the jet-powered Bluebird, regained the water speed record on July 23, 1955 with a run at 202.32 mph. The next year he raised it to 225.63 mph; in 1957 he boosted it to 239.07 mph and in 1958 to 248.62. This stood until May 14, 1959 when Campbell again broke his own record with a speed of 260.35 mph.

The name that has graced the long succession of top speed record cars and boats originated in 1911. Sir Malcolm christened his 10.5-liter Darracq "Bluebird" and with it broke the land speed record at Brooklands.



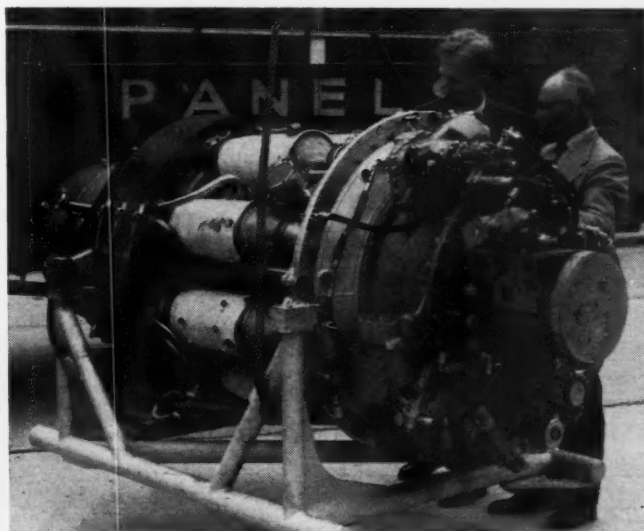
## TURBINE POWER

It is 23 years since a British car was built for attempts on the record: John Cobb's, which was powered by two Napier Lion 23-liter airplane engines; it was about the same time that Whittle was doing his early research work which culminated in the dominance of the gas turbine in the aeronautical field. Therefore, it's appropriate that Donald Campbell will use a Bristol-Siddeley "Proteus" gas turbine (he uses a Metropolitan Vickers pure jet for his boat) to power the new car.

Regulations laid down by the F.I.A. govern land speed record attempts, and considerably influence the design. It must be "a land vehicle propelled by its own means, running on at least four wheels, not aligned, which must always be in contact with the ground; the steering must be assured by at least two of the wheels and the propulsion by at least two of the wheels." The last clause means that there must be a direct drive from the engine to at least two of the wheels—in fact, in the Bluebird the Proteus drives all four. Thus

pure jets and rockets working on thrust only may not hold the official record.

Among other conditions which must be satisfied for the record—which is regardless of any capacity class—a new record must increase the previous one by one percent of the average speed, the speed being the average of two runs within 60 minutes. Thus this year's contenders must achieve



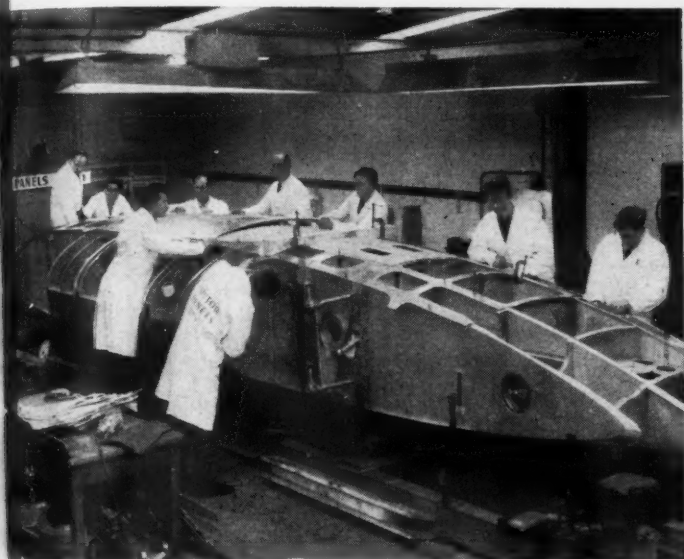
Leo Villa, Campbell's top mechanic, checks Proteus turbine. At screaming 11,600 rpm, it quaffs 360 gallons of fuel an hour, puts out 4000 bhp.

a mean speed of 398.14 mph to appear on the record books. Campbell's immediate object is to put it at 400 mph, but the car is designed for an ultimate speed of 500.

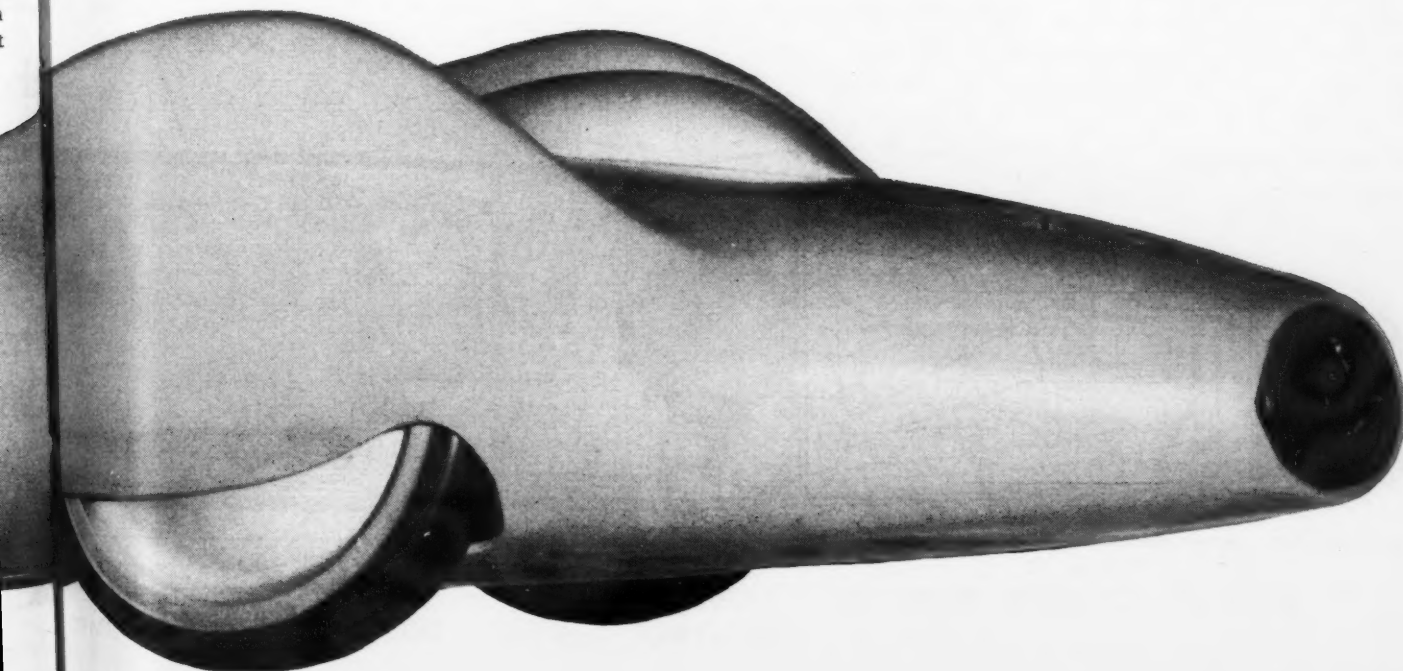
### ABSORBING PROBLEMS

Design problems with a car intended to achieve speeds of this order when running on a straight line are very different from those of a normal racing car. It's a relatively easy problem, with today's gas turbines, to obtain sufficient shaft horsepower to achieve the desired speed if there's unlimited length for a maximum run-up and slowdown at each end of the measured mile. The maximum length of the straightaway

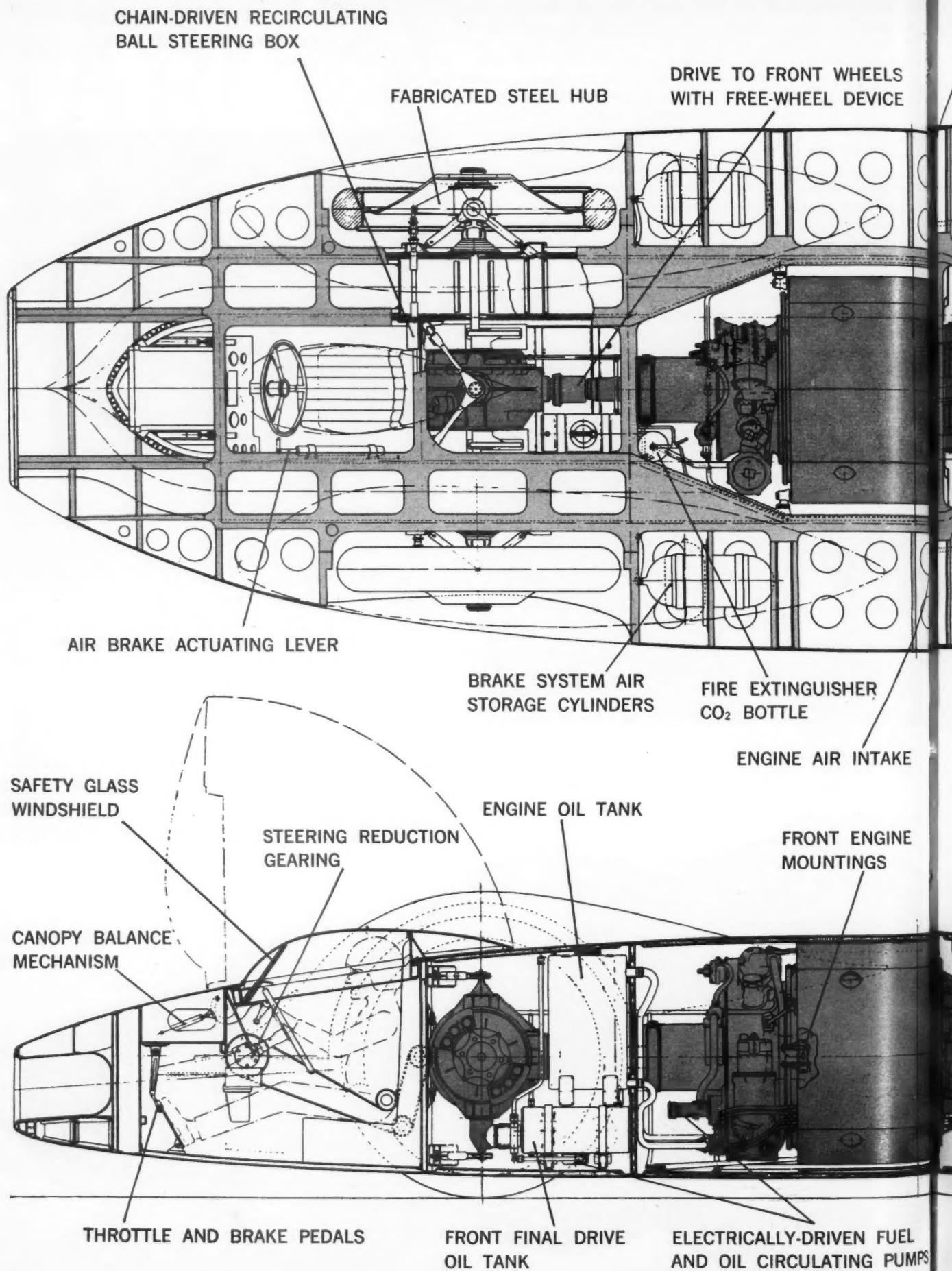
(Text continued on page 88; drawing overleaf)



Using aircraft techniques, specialists built streamliner's sleek form. Rear suspension, center, is adjustable and identical to front units.







BRISTOL-SIDDELEY PROTEUS  
GAS TURBINE

REAR FINAL DRIVE OIL TANK

CAMERA AND LIGHTS

BRAKE SYSTEM  
CHARGING  
AND JACKING  
CONTROL PANEL

ELECTRICAL  
SERVICES  
DISTRIBUTION  
POINT

BATTERIES

AIR BRAKE ACTUATORS

REAR DRIVE SHAFT

PHOTOGRAPHIC DASHBOARD

FUEL TANKS

REAR ENGINE  
MOUNTINGS

"It's felt that driving a land  
speed record car is closely  
related to high-speed test flying."

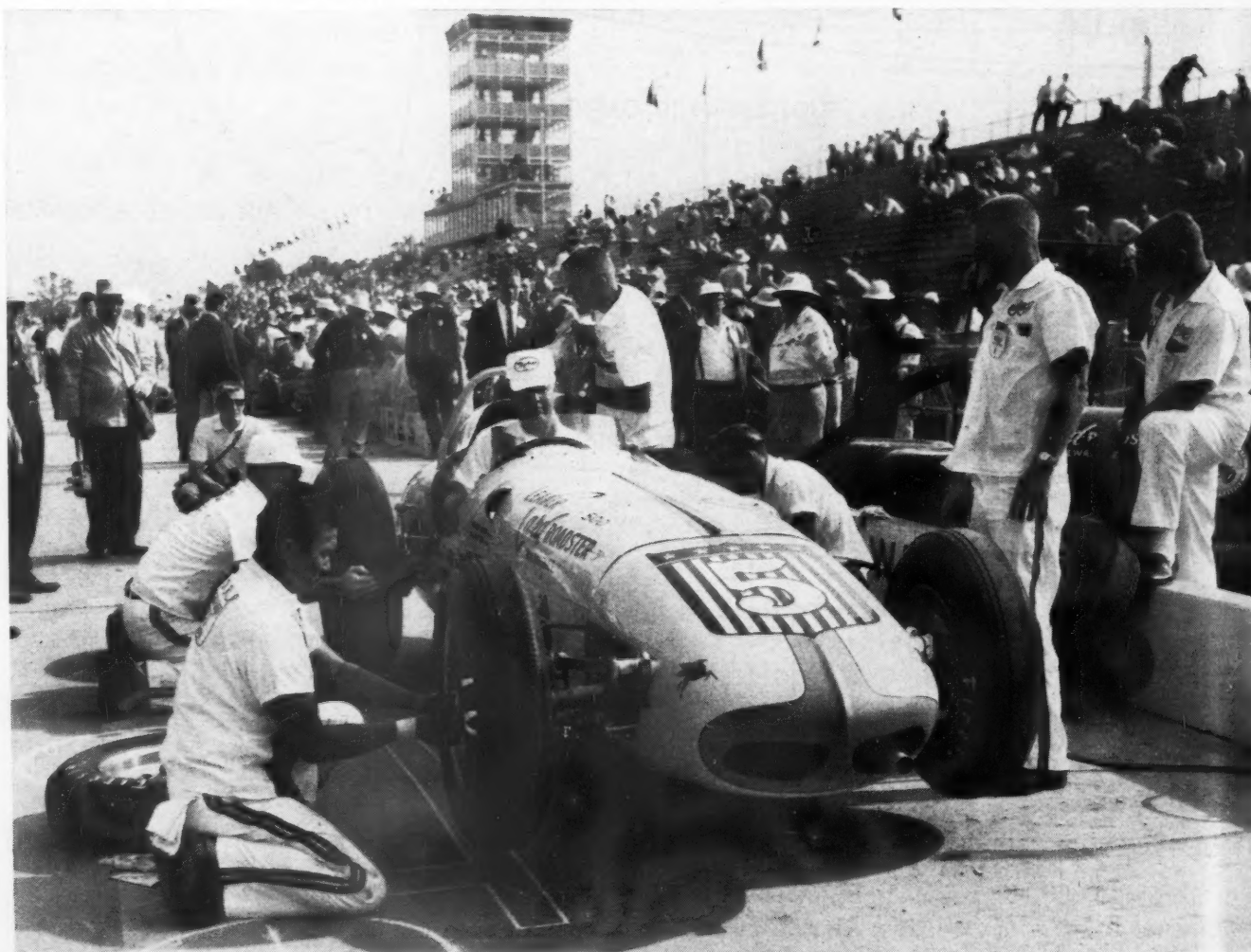
PARALLEL-WISHBONE SUSPENSION  
AT ALL FOUR WHEELS





The front row of the 1958 Indianapolis 500 was made up entirely of Watson-designed cars. Left to right: Jimmy Reece, Ed Elisian and Dick Rathmann.

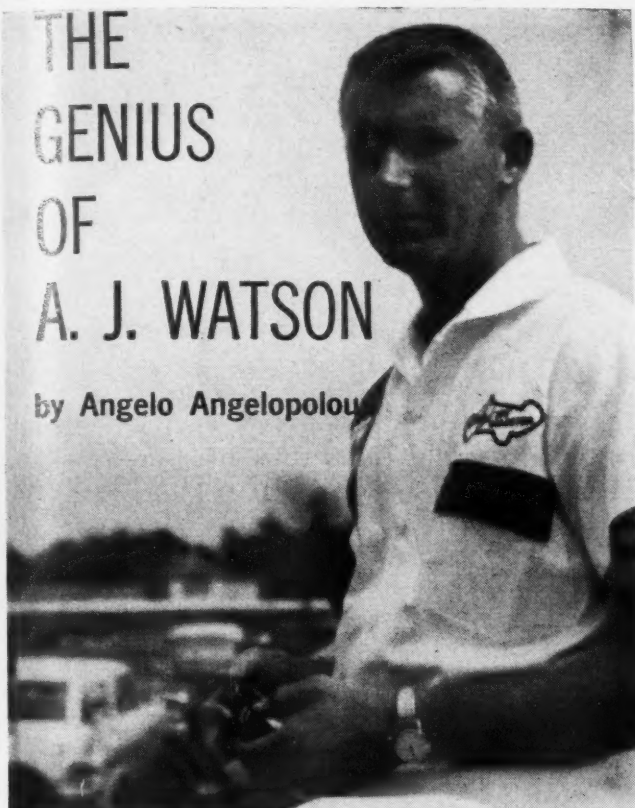
Nothing is left to chance in a Watson-run team. Here 1959 crew go through practice pit stops. Watson pumps fuel while wheelmen change all four tires.



One man just can't seem to lose for winning at the 500. It's not luck that does it—just . . .

## THE GENIUS OF A. J. WATSON

by Angelo Angelopolou



► Perhaps no human endeavor outside rocket-launching so dramatizes the perverseness of metal in motion as the annual race at the Indianapolis Motor Speedway. The typical Indy car is usually a four-cylinder power plant encased in only essential light metal and dominated by four unashamedly naked wheels whose outsize tires are weirdly treaded for high-speed left turns. It is temperamental enough, with its 255-cubic-inch engine wound past the point of all reason, but placed in a confined space with 32 other machines for a four-hour full-speed dog-fight there is no logic that predicts anything but a short life for it. Yet for the past six years the wheeled products of a 36-year-old, prematurely-gray, slim, blue-eyed, crew-cut mechanic-builder have defied the logic of the situation by: (1) winning four of the last six 500-mile races; (2) doing so with four different drivers; (3) making up the entire front row on the grid in two races; (4) setting five qualifying records, and the race record.

The stamp of superiority and the winning ways of cars by A.J. Watson are the result of a genius born of inspiration, skillful creation, industry, expert psychology and exceptional strategy—all practiced and refined under the pressure of the Indy grind. Unlike the stereotyped "genius", Watson is not unkempt, not wild-eyed, not temperamental, not moody, not impractical and not unapproachable. And if there is anything mystical about A.J., it is in the little-known translation of those initials—Abram Joseph. But Watson removed the latent Biblical ring when he changed his name officially to the letters on his entry into the Air Force.

In the past six years, the Watson genius has paid off richly in both prestige and cold cash. Watson cars were first and second in two Monza International 500 races; a Watson mount turned the fastest closed-course race ever run at Daytona a year ago at an average of 170.261 mph and in the last half-decade Watson-made-and-maintained cars have won \$700,549, the richest purse any one man can point to in United States automobile racing.

A. J. nevertheless is not one to play it cozy. In the years

at Indianapolis when he has had multiple entries, he has kept the odds long by letting his drivers compete against themselves. The first five cars on the 37th lap of the 1959 Indianapolis contest were Watson creations. When the 200th and final lap was done, Rodger Ward, driving for Watson, had won the race and Jim Rathmann, chauffeuring a new car Watson had built for someone else, was second. That lap number 37 may be the most preposterous, from a mechanical standpoint, of the 8,658 laps that have been turned at the historic two-and-a-half-mile oval since the beginning in 1911. It can serve as a frame to highlight the dominance young A.J. has assumed against odds that are unfigurable.

Watson went on from there to put his imprint all over the 1960 Indy field. Of the 33 cars in the lineup, 11 were made by A.J.'s hand or from his stampings—or, as in one case, a chassis reworked by him. As in '59, his cars were one-two again, Jim Rathmann, the winner, in a new one built for him, and Ward, runner-up, also in a fresh mount. The pole-winning car, driven by Eddie Sachs to new records that stood only a week, was fashioned from Watson blueprints—by A.J.'s body man himself, Wayne Ewing. The car that Jim Hurtubise later drove to his awesome 149.056 time trial average was a two-year-old Watson machine—the one in which the ill-starred Ed Elisian was killed in a flaming crash at Milwaukee. In this past May's race three of the top four finishers, four of the first seven, five of the first 13, six of the first 18, were "Watson" cars. In the sale of his blueprints, Watson probably comes closest to the common concept of a genius in his disregard for the buck. A.J. sells his plans for \$200, but, as he says, "only to good friends of mine; not to just anyone".

The chief steward of the 500-Mile Race, Harlan Fengler, says "You can line up another car with A.J.'s—and it will have basically the same materials and same weight—but A.J.'s will perform differently. He's in tune with racing". "Simplicity" is the first word Watson's contemporaries use when asked to describe his routine. On his race cars there are never two brackets where one will do. There is no "monkey motion", as mechanics describe movement of parts that accomplish nothing.

"He doesn't put things on a car to see how pretty they are", explains Jud Phillips, who grew up with Watson in the tooling trade. "His plain engine mount, for instance. Just three pieces welded together. Someone else would build it like he was working at an aircraft factory. He'd put all kinds of fancy webbing on it and streamline it. If A. J. built this for the aircraft factories they wouldn't accept it. They'd say it looks as if it was made by a blacksmith. The other builders don't think it's dignified some of the ways A.J. builds his cars. But they work."

With Watson genius is cleanliness. Watson's is so obvious, almost to the point of being antiseptic, that one feels it must be part of the wizardry. Even when spraying solvent to clean parts Watson manages to keep his starched, immaculate linen work clothes unsullied. Somehow he disciplines the race car into the same cleanliness. When Ward's winning mount was backed into the garage a year ago May there wasn't a drop of oil or grease in the cockpit, a most unusual occurrence.

The A.J. genius is also remarkable efficiency. Watson never so much as picks up the wrong wrench. His foresight, the anticipation of what his car will need or his driver will want, is uncanny and seldom finds Watson going back to a particular part of the machine to make amends. Ward still marvels at the few adjustments made on his untried car in 1959.

"We did so little it was almost ridiculous. By the time race day came our chassis weight wasn't over two turns of adjustment different than he had it at the beginning of

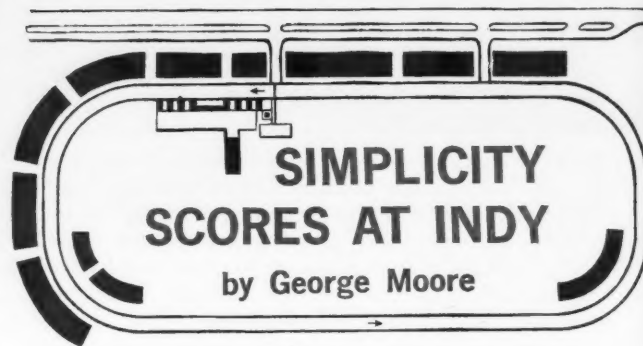
(Continued on page 74)





Jim Robbins Special showed up at Indy with augments tube to help scavenge exhaust gas. It qualified, but with regular exhaust pipe in tube.

Every year a few new cars enter the lists for a chance at the big money on the famed brick yard. The ones that make the grade all follow the same precepts: simplify and add plenty of lightness.



► If there was any dominant factor in the Indy picture this year it was the series of automobiles built by a 34-year-old craftsman from Glendale, California, who seemingly has a master's touch which allows him to create simple, functional racing cars which not only work, but work so well that nothing else compares with them.

As a result, two men instead of one were the victors in the 1960 500-Mile Race. The Memorial Day classic was, of course, won by Jim Rathmann in the Ken-Paul Special. But lurking in the background like an all-enveloping shadow was the image of car-builder-mechanic A. J. Watson.

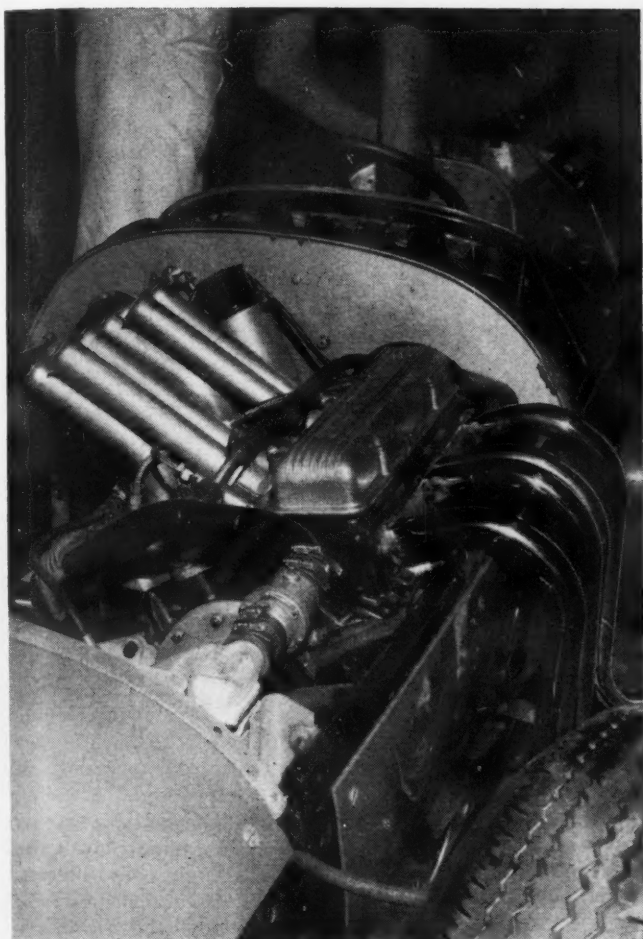
This definitely was a Watsonian year at Indianapolis, for following the inaugural day of qualifications the first two rows of the starting lineup were packed solid with Watson-designed creations. And with the exception of a brief appearance at 225 miles by Johnny Thomson in the laydown-engined Adams Special, the entire show was put on by the conventionally-built Watson jobs which consist of a simple tube frame, front and rear transverse torsion bars, engine standing upright and mounted to the left, and a driver's compartment located to the right so it permits the drive shaft to go past the left side of the seat.

Both Rathmann's car and second-place-finisher Rodger Ward's Leader Card Special were brand-new, the incomparable A. J. having fabricated them last winter in California. And both drivers and cars were so evenly matched that up to 492.5 miles when Ward's rubber went out from under him the two chauffeurs were one second apart.

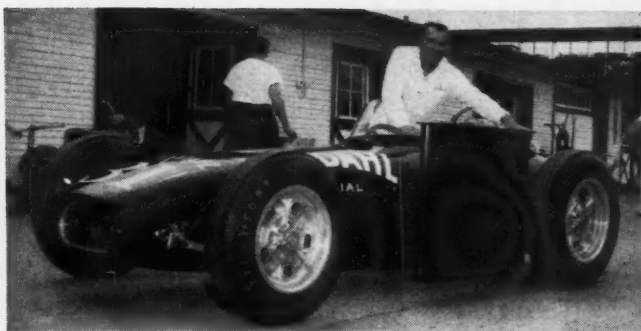
The basic foundation of a Watson chassis is nothing more than a truss-type frame made from 1½-inch by .095 chrome-moly for the upper and lower main rails and upright struts. The diagonal struts are fabricated from ¾-inch by .125 tubing. And the whole gas-welded assembly is offset one inch to the left on the axles. The Meyer-Drake four-banger is offset seven inches, giving the engine weight a total offset of eight inches. Chassis completion is brought about by bolting on the Halibrand front and rear axles, bars, and steering gear, fabricating fuel tanks and an outboard-mounted oil tank, then adding all the minor accoutrements plus the skin to obtain the final unit. With the exception of the offset feature, the chassis design is very similar to that fabricated by sports car builders who utilize big American V8 powerplants in their short-wheelbase specials.

One of the greatest misconceptions about the Speedway is that all cars with the exception of something like the Novis are exactly alike. This, of course, is far from being the truth. There is always a touch of the odd-ball element at Indianapolis. And even though they generally do not make the program, such cars usually can be depended upon to add a bit of spice to the proceedings.

Chief mechanic Fred De Orion showed up with the Bardahl Special, sporting a huge fin mounted on the left side of the chassis which looked like an airplane wing standing on end. The fin was designed to act as an airfoil, the theory being that when the car went through the corner the lift effect would partly offset the outward centrifugal force

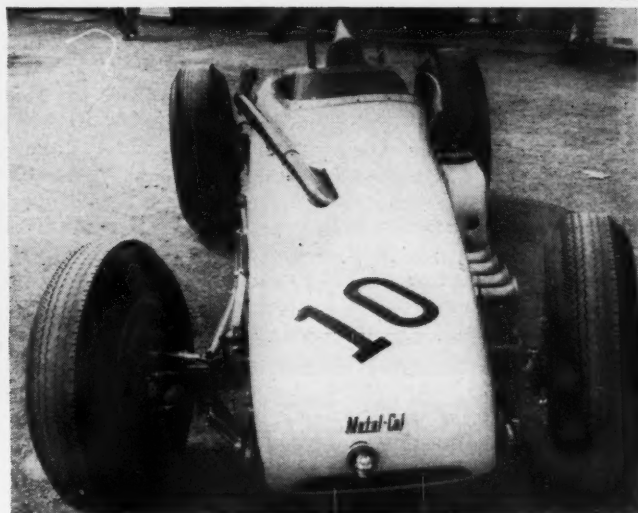


Two "stock-block" cars were brought to Indianapolis this year. Neither made the grade. Both Chevs were reduced in size to 256 cubic inches.



Side-mounted wing on Bardahl Special was intended to offset centrifugal force in the corners. Airfoil, however, did not work in dead air space.

POE



Builder George Salih tried a new front suspension. It had four short bars which progressively (with adjustments) controlled axle movements.

acting on the automobile. The fin was controllable by means of a pedal operated by the driver's left foot. Pressure on the pedal would swing the front of the fin outward, so, again in theory, it would be possible to vary the amount of lift dependent upon the need.

It didn't work for two apparent reasons. First, the air space between the two left wheels contains dead air, hence there was not enough lifting effect even to pull the car off-course on the straightaway. Second, the rearward drag set up by the turbulence at the top of the fin actually slowed the car below the times it could turn without this appendage on the chassis.

The most distinguishing feature of Jimmy Bryan's new Metal Cal Special was the front suspension. Builder George Salih still employed the transverse torsion bar with solid axle principle, but with an important difference. The front end had four short bars, two of which acted directly on the axle via trailing arms, and two which functioned somewhat like individual sway bars. These bars were equipped at their outer ends with adjustment stops which bumped against the bottom of the trailing arms, so when the axle movement reached a certain point it brought all four bars into play.

The Jim Robbins Specials driven by Eddie Johnson and Bud Tingelstad tried an experiment with an augmentor tube of the type used in aircraft to relieve air pressure in the nose compartment. The idea on the Robbins automobiles was not only to carry the heat out of the engine compartment, but also to help scavenge the exhaust gases from the

header pipes. The manifold was cut off just beyond the point where all four header branches joined together, and this end was positioned approximately  $\frac{3}{4}$  of an inch ahead of the tube opening in the engine compartment. As the air flowed out of the compartment, the flow helped extract the exhaust gases from the manifold. It worked so well that the air flow not only scavenged the gases but also pulled the unburned fuel right through the engine, causing a loss of power. Both cars qualified, but with a standard exhaust pipe installed inside the augmentor tube.

The V8 contingent, none of which made the show, was represented by two modified Chevrolets, plus the perennial problem-children, the Novi Specials. The Chevrolets had their bores dropped to 3.683 inches and strokes to 2.990 inches to make the 256-cubic-inch displacement limit. The Novis were equipped with modified Bendix aircraft carburetors which ageless chief mechanic Jean Marcenac had developed to cure the spit-back problems that plagued both cars in 1959. Marcenac mated the carburetors with injector nozzles mounted on a venturi casting that bolted to the front of the blower. The system had a fuel regulator which was controlled by the vacuum created by the venturi, and this regulator acted as the brain in supplying the proper fuel/air ratio to the supercharger.

Indy 1960 again has proved a principle which is older than the automobile itself: the best design is the simplest design. And you don't have to play around with machinery that only turns left to find that out.

—GM



► On February 2, 1958 Calvin Rice, driving a Chrysler-engined dragster, made racing history by breaking Bernd Rosemeyer's Auto Union record for the standing-start kilometer (SCI, May, 1958). The German-held record had stood since 1937 and, though considered by many authorities to be unbreakable, was raised by Rice from 117.3 to a decisive 123.56 mph in 18.10 seconds. This was a staggering performance but no one familiar with dragster design considered for an instant that this new record might be the ultimate one, as limited not by horsepower but by the friction coefficient of rubber tires on pavement.

Mickey Thompson, who last winter drove 364 mph at Bonneville (SCI, January, 1960) to become the fastest American in history and holder of four absolute world records for top speed, recently decided to revise further the F.I.A. and USAC record books. It was his plan to attack Rice's absolute record, plus the international and national records in Classes A (over 8000 cc), B (5000 to 8000 cc) and C (3000 to 5000 cc). And, if conditions seemed right, he would attack the standing-start mile records as well as those for the kilometer.

#### THE POWER

Mick worked with the Pontiac Tempest V8, which has 389 cubic inches stock ( $4 \frac{1}{16} \times 3 \frac{3}{4}$  inches). His big Class A engine was massively stroked (to  $4 \frac{1}{8} \times 4 \frac{5}{8}$  inches), giving 503 cubes (8250 cc). Class B was easier ( $4 \frac{1}{16} \times 4$ ), at 415 cubic inches (6790 cc), and the Class C engine was 293 cubes (4800 cc), reached by destroking ( $3 \frac{15}{16} \times 3$  inches). He equipped each V8 with a chain-driven, top-of-engine-mounted GMC-Diesel Roots supercharger, fed by Hilborn injection. On straight methanol the big engine was tuned to deliver a horrendous 846 bhp on the Thompson Enterprises' dynamometer. A Dragmaster chassis (series-produced by Dragmaster Co., 3425 Ann Drive, Carlsbad, California) was prepared to receive the high-gear-only engines and was equipped with a not-very-aerodynamic aluminum shell.

#### THE PLACE

There are few courses in the United States that are suited to standing kilometer record attempts (Bonneville's salt usually is too moist to provide adequate traction) and almost none that are suited to the standing mile. One of these few is March Air Force Base near Riverside, California, where the Rice records were set on a 13,300-foot asphalt-paved landing strip. Again, for Mickey Thompson and in the interest of American prestige internationally, the USAF thrust red tape aside and granted carefully-supervised access to the strip to USAC officials, the Thompson crew and a small handful of journalists.

Under a dark, heavily-overcast sky last May 14 Mick fired up his small engine and made his first takeoff at 6:30 a.m. An unexpected, overnight change in weather had sent the normally-arid atmosphere close to 100 percent humidity; the engine consequently was running excessively lean and Mick shut off in mid-career and returned to his pit to re-jet. Fifteen minutes later he made his first full southbound run in which he easily topped—one way—the International Class C record of 19.21 seconds or 116.43 mph average. At 7:30 he shot northward but broke a wrist pin, which jammed the piston and locked the engine up solid. He coasted through the final timing light 1.5 mph short of the existing record. That took care of Class C for the time being.

#### TWO FEET OF DAYLIGHT

Mick's crew had been carefully rehearsed in engine swapping and had gotten this down to a 90-minute routine operation. The C engine was pulled and the A engine installed in 86 minutes. Mick slipped into the roll cage, was pushed to a 50 mph start by his wife, Judy, in the same Pontiac Bonneville wagon that had been the team's workhorse on the Salt. The big engine lit with a deafening roar and Mick returned to the pit where the machine was allowed to idle until warm, which took about three minutes.

#### NEW ACCELERATION RECORDS ESTABLISHED BY MICKEY THOMPSON AT MARCH AIR FORCE BASE, RIVERSIDE, CALIFORNIA, MAY 14, 1960 (Subject To F.I.A. Confirmation)

Distance	Previous Holder	Car	Date	Speed	New MPH	E.T. Record	Secs. Average
<b>WORLD'S UNLIMITED CLASS</b>							
1 km (S)	Calvin Rice	Hot Rod Magazine Special	2-2-58	123.56	132.94	16.82	
1 mi (S)	Bernd Rosemeyer	Auto Union	10-26-37	138.7	149.23	24.12	
<b>INTERNATIONAL CLASS A (Over 8000 cc)</b>							
1 km (S)	John Cobb	Napier Railton	11-4-33	88.52	132.94	16.82	
1 mi (S)	John Cobb	Napier Railton	11-4-33	102.52	149.23	24.12	
<b>AMERICAN NATIONAL UNLIMITED CLASS</b>							
1 km (S)	Calvin Rice	Hot Rod Magazine Special	2-2-58	123.56	132.94	16.82	
1 mi (S)	Ralph de Palma	Packard 905	2-17-19	92.71	149.23	24.12	
<b>AMERICAN NATIONAL CLASS A (Over 8000 cc)</b>							
1 km (S)	No prior record				132.94	16.82	
1 mi (S)	Ralph de Palma	Packard 905	2-17-19	92.71	149.23	24.12	
<b>INTERNATIONAL CLASS B (5000 to 8000 cc)</b>							
1 km (S)	Calvin Rice	Hot Rod Magazine Special	2-2-58	123.56	132.71	16.85	
1 mi (S)	Bernd Rosemeyer	Auto Union	10-27-37	138.7	149.93	24.01	
<b>AMERICAN NATIONAL CLASS B (5000 to 8000 cc)</b>							
1 km (S)	Calvin Rice	Hot Rod Magazine Special	2-2-58	123.56	132.71	16.85	
1 mi (S)	Chuck Daigh	1957 Ford	9-7-56	84.02	149.93	24.01	

At 9:07 Thompson peeled off the line in a cloud of blue tire smoke. To the eye the course appeared to be reasonably smooth but for the dragster, with its unsprung rear and stiff torsion-bar front end, it was extremely rough. Standing midway down the course we watched the small, pale-blue machine streaking toward us, weaving and bouncing all the way. At one point literally two feet of daylight could be seen under all four of its wheels. The exhaust note kept rising and falling as the wheels would break loose and the driver would back off to re-establish his tires' bite. It's doubtful that Mick ever approached using half throttle with either his A or B engines.

#### SERIOUS BUSINESS

On that first run Mick was feeling out the car and course. He shut off at the end of the kilometer, having accelerated harder and longer than any man on wheels ever has. He changed coolant, refueled and, at 9:41, took off on his return run. This time he was sideways even more of the time but stayed on it and completed the mile distance. These two runs at an average of 16.82 seconds gave him the absolute record for the standing kilometer, with an average speed almost ten mph higher than Rice's. The same runs also netted him the National Unlimited and Class A records and the International Class A record which had been set by John Cobb at Brooklands in 1933.

At 10:11 a.m. Mick made his second, opposite run over the mile distance. His two-way average was over ten mph better than the World Record which had been set by Rosemeyer in an Auto Union on the Frankfurt-Darmstadt Autobahn in 1937. This time Mick also collected the National Unlimited and National Class A records which had been broken last in 1919 by Ralph de Palma in a very special Packard. And Mick broke the Cobb-held International Class A record for the mile. His standstill-to-mile-distance average speed was 149.23 mph; his tachometer indicated a final speed of about 230 mph.

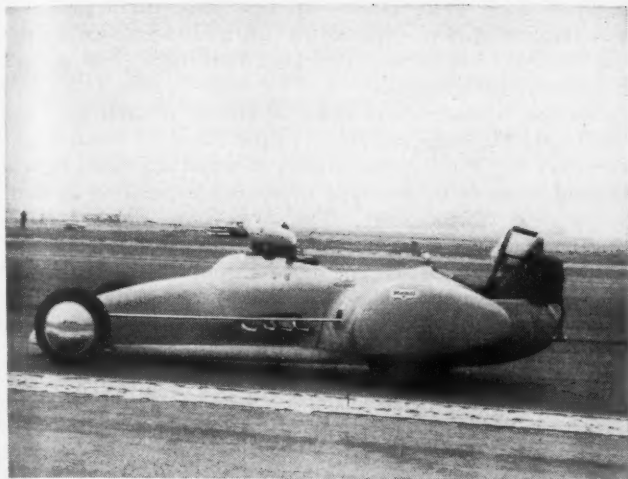
His runs with the 25 percent nitrated Class B engine were little different. With 16 percent less displacement he went as rapidly as he had with the big Class A power plant, demonstrating the well-known fact that horsepower is no problem in present-day American straightaway racing.

(Continued on page 93)

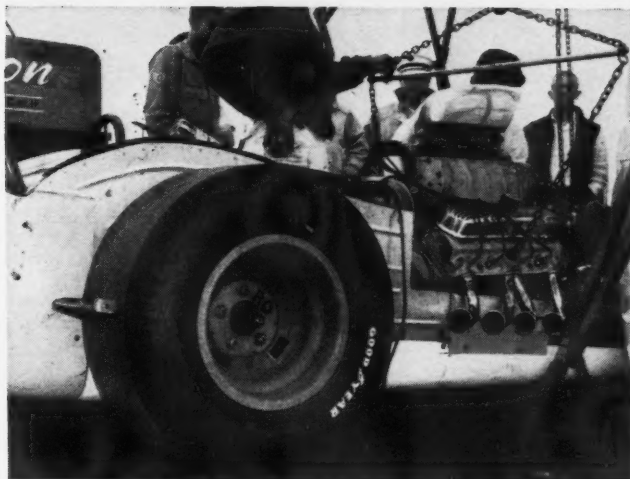
# ASSAULT WITH INTENT TO WIN

by Griff Borgeson

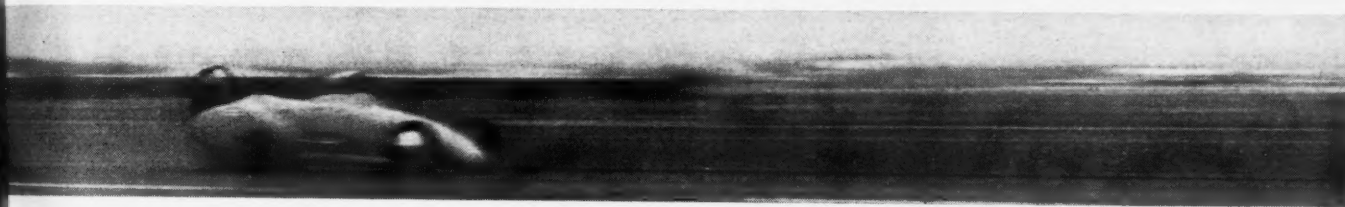
Take a good 300SL, one of the world's fastest road cars, and storm it by a waiting Mickey Thompson at full bore — say a hair less than 150 miles per hour. From a standing start, in just a mile, Mick and his fantastic Assault will have hurtled past and waved goodbye, doing a skittering, bouncing 230!



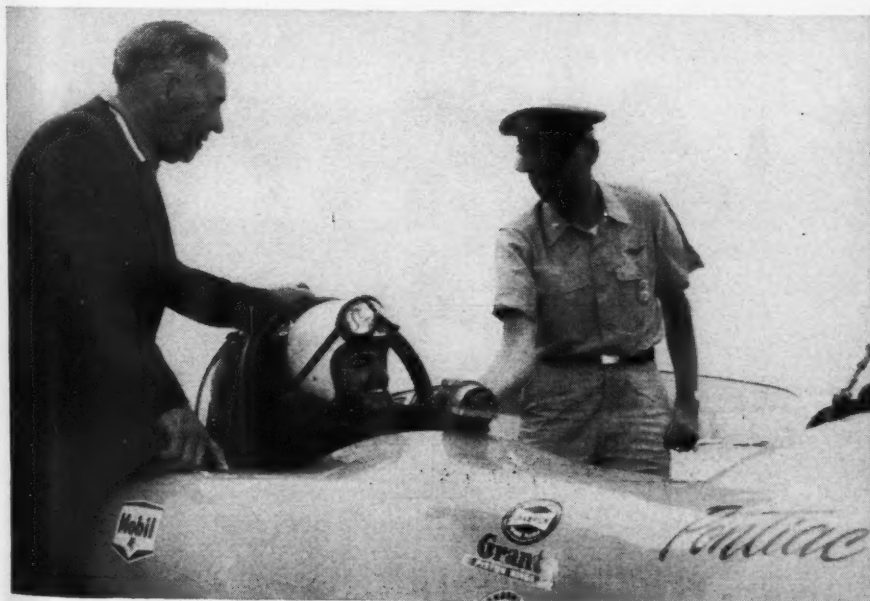
A car and a man with just one purpose: to break existing standing-start records. Mickey waits on the line prior to giving the Assault I its head.



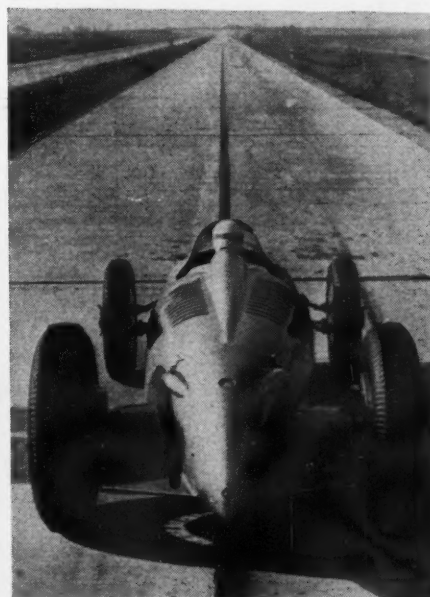
Prototype Goodyear "slick" made the record runs possible. Its 8.5-inch-wide smooth surface translated Pontiac's power into mad acceleration.



Mickey and the Assault I were just a blur on the March Air Force Base runway during the run that proved fastest mile and kilometer of all time.



USAC official Joe Petralli, left, and Major K. H. Brettman congratulated Mickey Thompson at the end of one of his record-shattering runs. He bettered 1937 Auto Union one-mile time by some 10 mph.



This 1937 6-liter Auto Union was the car that held the world one-mile standing-start record.



► Europe's economic recovery can be accurately traced by examining the post-war development of wheeled transportation for Mr. Every-European. In the late 1940s he was more than content on a bicycle. The early '50s found him astride a stuttering motor scooter, while the late '50s saw him coping with increasing traffic in his minicar. The next step up the motoring ladder for this eager consumer contains a myriad of models designed to pluck him from his suddenly undesirable miniature vehicle. Two from among the better-thought-out ones are the DKW 750 and the Arabella.

TYPOND



Crankshaft and three connecting rods constitute four of the seven moving parts in 750's two-stroke engine. Crankshaft rides in four bearings!

Initial impressions are difficult to convey—as they are usually concerned with size and shape—without referring to older, more familiar cars. Both the DKW and the Arabella fall—in size—somewhere between the Fiat 600 and the Volkswagen. They are both modern in shape, leaning toward the “dart”, or nose-down, tail-up school of design. The external shape of a car is a matter of taste in the majority of cases, and so it proved with these compacted economy sedans. Roughly half the people questioned on this point liked the DKW's looks while the other half opted for the appearance of the Arabella. Alike on the surface, both cars are similar under the skin with one big exception. Both have engines over 30 horsepower—DKW 34, Arabella 44—both are front-wheel drive, and both have column-activated four-speed gearboxes. The big difference between them is in the type of engine used. The DKW—in line with the company's engineering tradition—employs a three-cylinder two-stroke, while the Arabella is propelled by a four-stroke laid out in the flat-four configuration.

Cornering a front-wheel drive is always interesting (the reasons why are fully examined in the Panhard Road Test, June, 1960, SCI) and it was doubly so when we could switch back and forth from one type of engine to another in two separate and distinct cars. The first thing noticed after trying both was that the designers in each case have successfully masked the fact that the drive is supplied by the front wheels. Only in extreme situations—accelerating slowly around a sharp uphill corner—is there any reaction through the steering wheel in either car. On the straight, or in normal corners at highway speeds, both cars behave much like a conventional rear-wheel-drive vehicle. The technique for really fast—or apparently fast—cornering in either car was to get off the throttle well before the bend, get into the turn and then stand on it in an appropriate gear. Both cars when pushed hard lost adhesion at the rear. This could be

## Road Test: DKW 750 and ARABELLA



corrected by applying more power—if the driver had remembered to save a small amount of torque. If a choice had to be made between the amount of stiction generated by either car's suspension, the nod must go to the Arabella—but only by a small degree. The Arabella's trailing-arm rear suspension with angled pivot points (see page 31, February, 1960, SCI) in combination with its greater power is undoubtedly responsible for its marginally better handling. Driven this way, both little cars will provide a lot of harmless fun for the head of the household on his way home from the station. This type of driving will probably not interest the majority of DKW or Arabella users—it is interesting and reassuring to know, though, that both cars are capable of this sort of carrying-on. In line with this the stopping power of both cars is exceptionally good. On the DKW, front-wheel brakes are carried inboard, with the backing plates fastened to the differential case. The front drums on the Arabella are placed more conventionally at the outboard ends of the drive shaft. Both sets of front drums are liberally finned.

Neither car has a column shift which could be called precise. The DKW's cog shifter is vague in its feeling, giving no real indication where the various gears are lurking. When placed in first, third or reverse, the shift lever extends almost straight up in a seemingly unaccessible position behind the steering wheel. The Arabella's lever, while more accurate in its movements, still frustrates any precise or fast box work. Both cars have a synchromesh low, which is useful in traffic or very hilly country.

The differences between the four-stroke and the two-stroke engines were very interesting. Each appealed, but in very separate and distinct areas. The Arabella's four (four-stroke, four cylinders) idled quietly at stop lights, gave more power—albeit from 56 cc more displacement—and seemed to have a fair amount of torque at high revs. On the debit side, it created a good bit of noise at wide throttle openings, it was

very slow to warm up, and seemed to be lacking in steam at low revs. The last two points might have been due to poor tune on the car tested, which had a noticeable carburetion flat spot half-way up the rev range. The three-barreled "Deke" engine popped, crackled and snapped on the idle (a two-stroke problem) but in all fairness, the noise was not annoying. What was a bit disconcerting, however, was the accompanying vibration while the engine was ticking over. The big DKW seems a lot better in this respect, so this fault might be corrected through minor design changes. Low-speed torque was splendid while the noise level at anything but idle was very low. Accelerator pedal travel on the DKW was exceedingly short. So much so that it led to a close examination of the linkage. The link attached to the cross shaft had worked loose, so that full throttle was only opening the carburetor half-way. The most surprising thing was that tightening of the set screws—which then gave full opening at the gas works—did not appreciably increase the performance. Even with the linkage in proper working order, the pedal travel was still very short. With its good low-speed torque, the DKW engine seemed better suited to the F.W.D. configuration. Power was available at more or less the right throttle openings for going around corners. The Arabella's four, however, seemed happier, possibly due to its greater power—in thruway going. Balanced against this are those seven—count 'em, seven—moving parts of the DKW's two-stroke engine, so beloved by the ad copywriters. They of course do have a point—fewer moving parts mean less possibility of breakage. Fewer moving parts also mean less friction which in turn is conducive to revability. This seems to be the case with the 750 engine for slight toe pressure sends it singing to the top of its range.

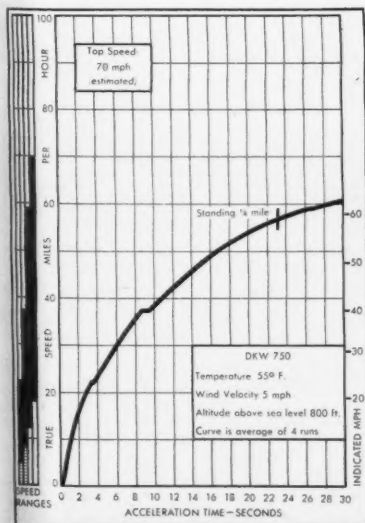
What could be a drawback, especially in the case of forgetful wives, is the two-stroke fueling procedure. All cars use oil, but those powered by two-stroke engines take it neat—

## ROAD TEST

### DKW 750

Price as tested:  
Distributor:

\$1665 POE East  
Mercedes-Benz Sales, Inc.  
635 South Main St.  
South Bend 27, Indiana



### ENGINE:

Displacement .....45.2 cu in, 741 cc  
Dimensions .....Three cyl, 2.68 x 2.68 in  
Compression Ratio .....8.0-8.25 to one  
Power (DIN) .....34 BHP @ 4300 rpm  
Torque .....47 lb-ft @ 2500 rpm  
Usable rpm Range .....1100-5200 rpm  
Piston Speed  $\div \sqrt{s/b}$  .....1920 ft/min  
@ rated power  
Fuel Recommended .....Regular  
Mileage .....25-32 mpg  
Range .....220-280 miles

### CHASSIS:

Wheelbase .....85.6 in  
Tread, F,R .....46 1/2, 47 1/4 in  
Length .....156 in  
Suspension: F, ind., wishbones, torsion bars;  
R, rigid axle, trailing arms, track rod.  
Turns to Full Lock .....1.1  
Tire Size .....5.20 x 12  
Swept Braking Area—drum .....148 sq in  
Curb Weight (full tank) .....1550 lbs  
Percentage on Driving Wheels—front .....59%  
Test Weight .....1760 lbs

### DRIVE TRAIN:

Gear	Synchro?	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	3.37		13.06	4.8
1st	Yes	3.75	68%	14.53	4.3
2nd	Yes	2.23	58%	8.64	7.2
3rd	Yes	1.41	50%	5.46	11.3
4th	Yes	0.94		3.64	17.0

Final Drive Ratio: 3.875 to one.





right through the gas tank. With the DKW, one pint of oil (SAE 30) has to be added to every five gallons of regular grade gasoline. (The Arabella, by the way, also uses regular.) This is not as complicated as it sounds, for the "Deke" has a built-in mixing chamber. Just pour the proper amount of oil in first, and then follow it with the gasoline. This total-loss oiling system peculiar to two-strokes has the virtue of assuring that only absolutely clean oil reaches the engine's vitals.

Inside either car one was impressed with just how much room could be built into a short wheelbase (DKW 85.6 inches, Arabella 86.6 inches) without arriving at a shape that is too high for its length. Both cars have the same problems inside: not enough wiggle room for rear seat passengers and intrusion of the wheel wells on the foot room of front seat passengers. The DKW seemed better on this last point than the Arabella, though neither was designed with a pair of size 12 cowboy boots in mind.

Seating in both cars was comfortable, with a personal bias toward the DKW's completely separate front seats over the Arabella's bench seat with split back. All doors are hinged at their leading edges and permit easy entrance and exit into the front seats. This cannot be said in all honesty about ingress and egress to and from the back seats. This requires an agility that only the young in spirit and body possess. If a great deal of use of the back seats by adults is contemplated, the DKW might save a smidgeon of wear and tear on some little-used muscles. A good point in favor of both cars was the positive locking action of the door catches. Children, once ensconced in the rear, cannot reach the door handles and won't fall out the rear windows simply because they don't open. This latter feature, however, might give adults a minor bout of claustrophobia, although ventilation was more than adequate in either car. Two-door body design also presents the problem of how to secure the hinged back of

the passenger's seat when empty. On the DKW a simple pull-up catch on the bottom seat rail is utilized, while on its test mate a superneat black knob on the outside top edge of both seat backs is used.

The Arabella solution scores on neatness and ease of use. The Arabella also features a fold-down rear seat back which enormously increases the car's capacity for odd-shaped packages. Both cars have very large trunks when one considers their overall dimensions. The Arabella has a separate compartment for the spare wheel and has a trunk light which both eliminates having to unload before changing a flat and helps light the scene of action. Both cars come equipped with tubeless tires mounted on 12-inch wheels for the DKW (13's optional) and 13-inch on the Arabella. The ride on the two cars was, for this day and age, a little disappointing especially at lower speeds. Neither car could be called free of a tendency to "hobby horse" over a succession of small ripples, nor did they maintain a constant level of riding comfort under various degrees of loading. With the engineering means at hand to eliminate this problem, inherent in short-wheelbase cars, it seems a shame to have them crop up—even to a small degree—on modern production cars.

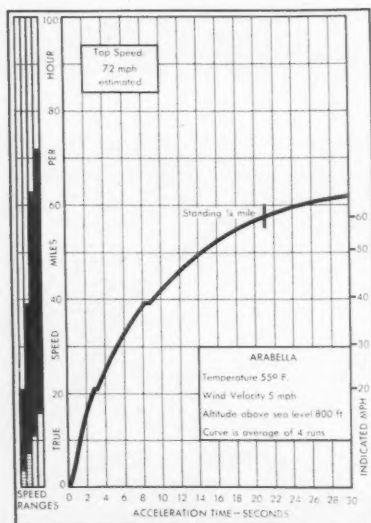
Instrumentation and interior trim are, in both cases, in the modern idiom. The first thing that strikes the eye is the use of deeply-dished steering wheels. The one on the Arabella goes the whole way with a bottom segment flattened to allow more room behind the wheel for the modern well-fed German businessman. Both cars have all instruments grouped in a hooded binnacle in front of the driver. In both cases the pods contain speedometer, mileage recorder, fuel and temperature gauges. The Arabella has more gadgets—windshield washers that worked in conjunction with the electric wipers, cigarette lighter, lidded glove box, rear seat ash tray, and a red warning light that showed whether or not the emergency brake was on. In addition, the car we tested

## ROAD TEST

### ARABELLA

Price as tested:  
Importer:

\$1745  
Amsco Distributors Inc.  
5069 Broadway  
New York 34, N. Y.



### ENGINE:

Displacement ..... 54.8 cu in, 897 cc  
Dimensions ..... Four cyl, 2.72 x 2.36 in  
Compression Ratio ..... 7.5 to one  
Power (SAE) ..... 44 bhp @ 4800 rpm  
Torque ..... 45 lb-ft @ 2500 rpm  
Usable rpm Range ..... 1000-5800 rpm  
Piston Speed  $\div \sqrt{s/b}$  ..... 2025 ft/min  
@ rated power .....  
Fuel Recommended ..... Regular  
Mileage ..... 25-32 mpg  
Range ..... 230-300 miles

### CHASSIS:

Wheelbase ..... 86.6 in  
Tread, F,R ..... 47 1/4 in  
Length ..... 150 in  
Suspension: F, ind., coil, wishbones; R, ind., coil, trailing wishbone, anti-roll bar.  
Turns to Full Lock ..... 1.65  
Tire Size ..... 5.20 x 13  
Swept Braking Area—drum ..... 176 sq in  
Curb Weight (full tank) ..... 1600 lbs  
Percentage on Driving Wheels—front ..... 55%  
Test Weight ..... 1850 lbs

### DRIVE TRAIN:

Gear	Syncho?	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	4.51	—	17.50	3.8
1st	Yes	4.77	89%	18.50	3.6
2nd	Yes	2.52	61%	9.78	6.8
3rd	Yes	1.57	45%	6.09	10.9
4th	Yes	1.09	—	4.21	15.7

Final Drive Ratio: 3.875 to one.



was fitted with the optional radio which was rained out of commission through a leaky heater-control panel. Both cars had key-activated starters, with the DKW impressing by the rapidity of its starts, the engine popping into life seemingly after half a revolution of the crankshaft. Short-legged Arabella drivers (or at any rate people who would not drive in a splay-kneed posture) might possibly be setting themselves up for a bad cut from the key inserted in the combination ignition switch, steering-wheel lock and starter. It should be possible to mount this little horror off to one side. The wheel lock does seem like a good idea in this era of mechanically-adept juvenile delinquents, however.

Column-mounted (to the right and left in both vehicles) stalks control headlight dipping, turn signals and continental-type high-beam flashers that quietly tell road hogs to move over. In addition to the flashers both the DKW and the Arabella have horns that are loud enough to command attention. This is one point that is generally overlooked on small cars, the majority of them having honkers that sound like someone has just stepped on a mouse. The Arabella's horn is sounded by pushing in on the right-hand stalk, while the 750's gives the alarm by the more conventional horn button set in the steering-wheel hub. Either one can be used without having to move a hand too far from the steering-wheel rim.

Crash protection for the front seat occupants has been given some thought in both the DKW and the Arabella. The designers of the last-named seemed to have gone into the aspect a little further than those working on the "Deke". The Arabella has the top of the dash pretty thickly padded, while the bottom edge is protected by a half-round rubber strip. The Arabella's sun visors are also padded. The DKW's dashboard is constructed of frangible material that looks like it could absorb quite a lot of energy. Both dash-



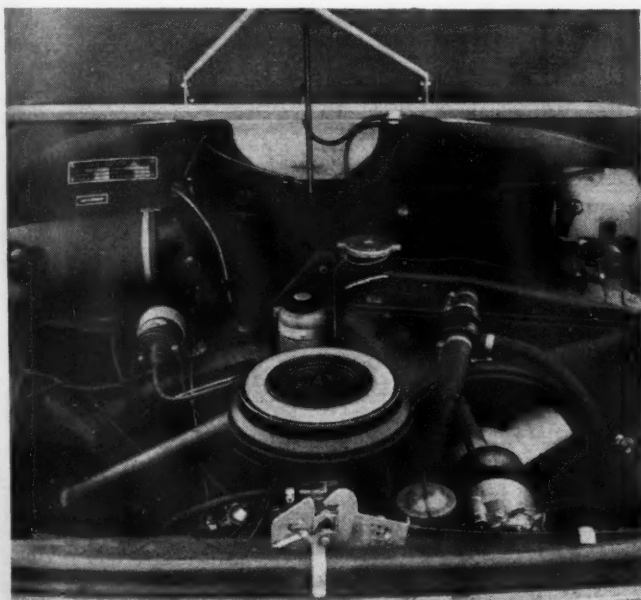
Arabella interior is very U.S. in concept with bench-type front seating, and dished steering wheel. Wide, front-hinged door makes entry simple.

adequate. The controls (on both cars) that directed it to the various parts of the vehicles were less than pinnacles of design, however, being (again on both cars) small levers that required a good bit of digital strength to operate. Upholstery on the Arabella was all imitation leather in muted colors, which — besides being unobtrusive — could be cleaned with soap and water. The DKW's interior was done in fabric trimmed with something called leather cloth (imitation leather?). The material used in the "Deke" seemed foreign and at odds with the modern styling gambits used in the rest of the interior — although we may just be jaded from the excesses of recent American automotive upholsterers. The headliners on both cars were neatly done, with that on the DKW concealing a good bit of insulating material. In speaking about the interior appointments it is interesting to speculate about the considered need for courtesy lights with three-way switches in both cars. Do such items as these upgrade an automobile in the eyes of the modern German consumer? At any rate, both cars have them and they are handy for decanting people and packages in dark driveways.

Both cars are delivered with very comprehensive owner's manuals and tool kits. The Arabella's tool roll was noteworthy in its completeness — containing no less than four screwdrivers, plus five open-end wrenches! A twelve or thirteen-inch wheel and tire does not present too much of a problem for the average healthy young matron to lift, while the side-mounted jacks aid and abet female flat-changing by being easy to operate.

There you have two new cars exemplifying a new breed of European automobile, two that will do much to put continental families on wheels. The question now is: how will they fit into the scheme of things in the U.S.? Both will make ideal second cars for that fast-growing group of two-car families. Either will take to the daily grind of suburban short-haul trips like a miniature cross-town bus. At the same time, either one would make a good first car for a young couple. Modest first price, adequate luggage space and long-trip capabilities make the DKW 750 or the Arabella good choices for the one-car family. For either sort of use both cars share an outstandingly good feature — both are simple in their mechanical specifications with few (if any) ultra-complex parts which must be in top tune to give good performance. In this respect they may be likened to modern Model As — an automobile which in its day took millions of families there and brought them back, inexpensively and with an ebullience that hasn't (according to many motoring sages) been matched to this day.

—SCI



Arabella's low-mounted flat-four engine is water cooled by side-mounted radiator. Placement of power package keeps car's center of gravity low.

boards have non-reflecting tops, the good effects of which are cancelled out by the shiny plastic doodads that do reflect in the curved windshields. Aside from this annoyance, vision from the driver's seat in both cars was excellent. All four fenders were easily in view without undue twisting or turning in the seats. This is one of the joys of small-car driving — vision is almost always good and steering so responsive that even mediocre wheelmen seem to get with it quickly with the little 'uns.

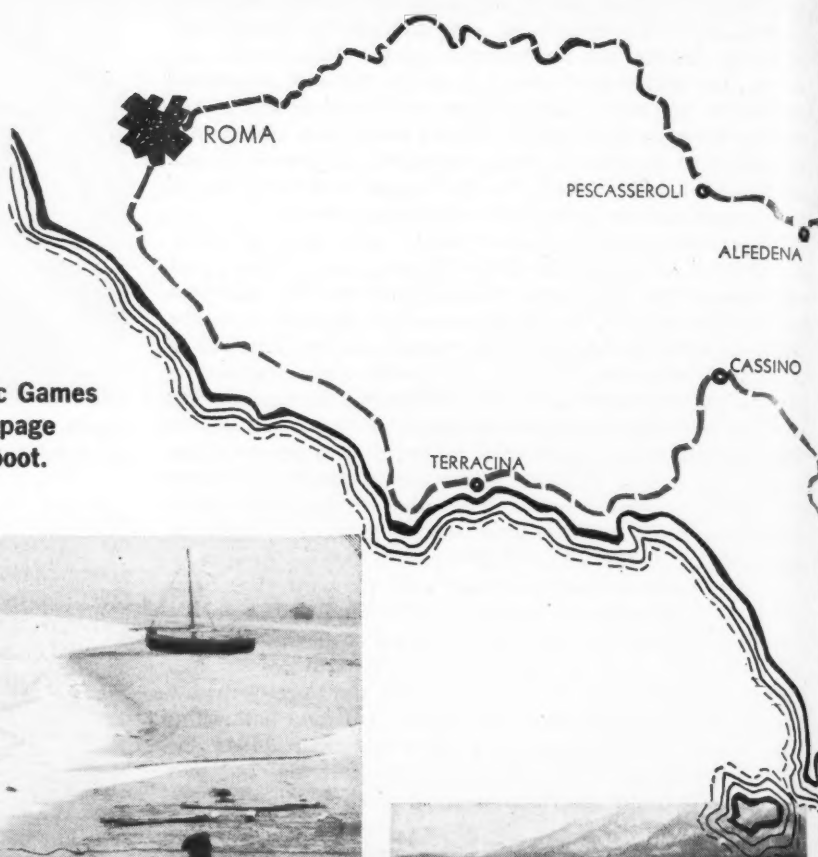
The quantity of warm air supplied by the heaters was



# ROADS AWAY FROM ROME

by Julius Weitmann

The why, how, and where of a post-Olympic Games Italian Odyssey are contained in this three-page story of an auto trip through the colorful boot.



Part of the trip's fun is in trying regions' foods. Here traveler buys fresh lobster at Vasto.



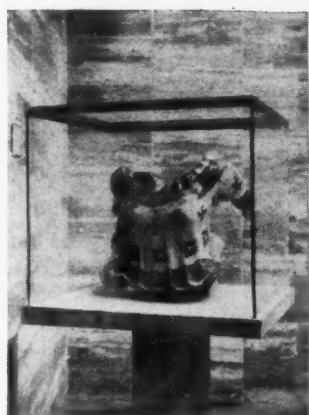
Pescasseroli residents try the Merc for size.

Market day!

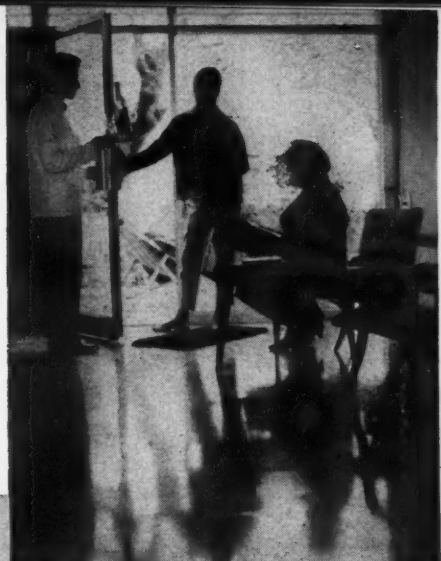


The Autostrada del Sole skirts the coast of the Abruzzi on its way south.

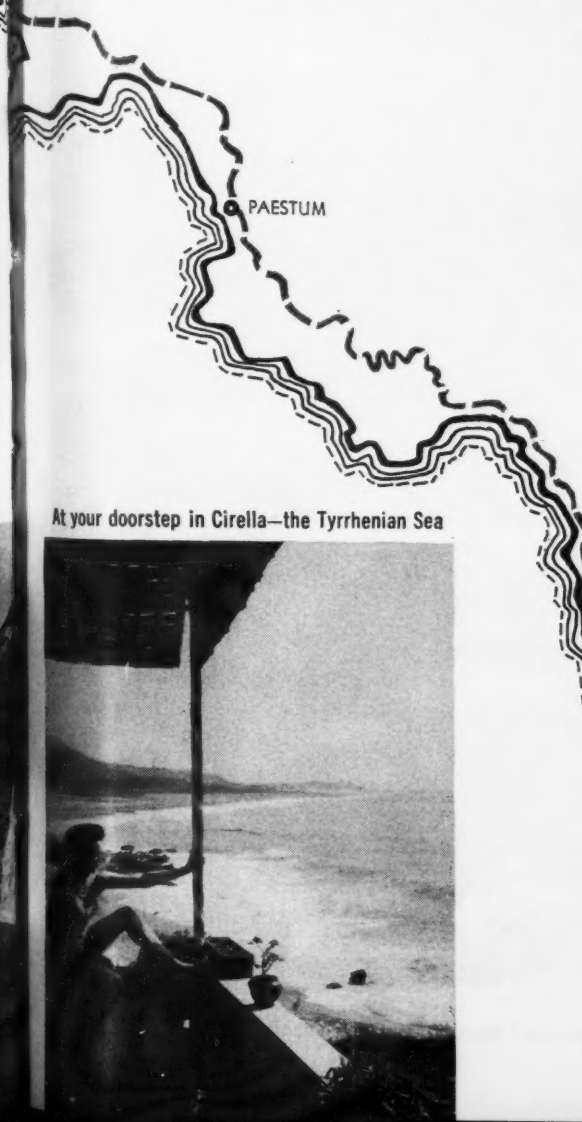
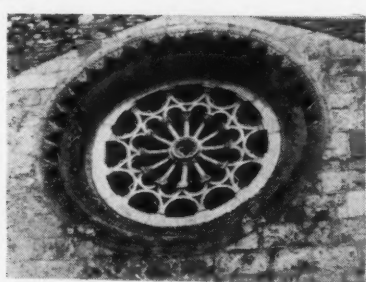




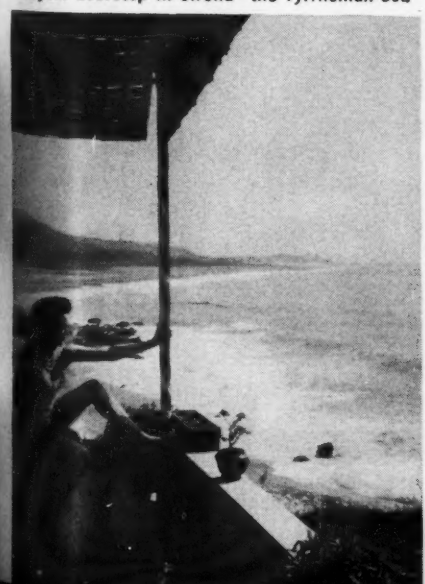
Remnants of past glories abound.



Autostelli offer good lodgings for travelers



At your doorstep in Cirella—the Tyrrhenian Sea





## ROADS AWAY FROM ROME

► If you are fortunate enough to be in Italy for the 17th Olympic Games, August 25 to September 11, and have made no plans following their closing, try this offbeat itinerary. Many are familiar with Rome and Naples, but how many—even Europeans—know the Italy south of Mt. Vesuvius? Travel through the unspoiled beauty of the “boot” is still the exception rather than the rule for Italian visitors but the lure of its diverse vistas has been felt by the Italians themselves who have been building a road—the *Autostrade del Sole* (Highway of the Sun)—which one day will reach the tip of the boot. Meanwhile, they have already constructed many “Autostelli”—motel, we would call them—hotels for tourists which, with their contemporary styling and reasonable pricing, help make the junket to the south pleasant and comfortable.

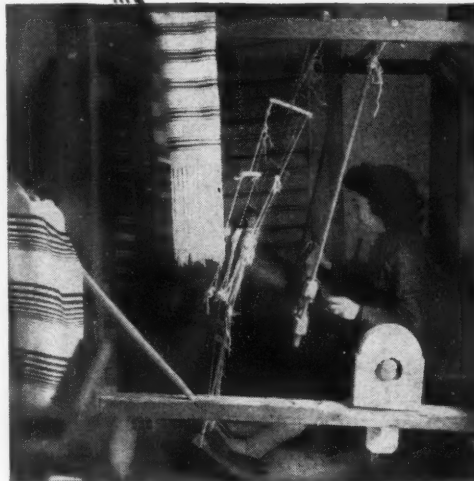
Maintained by the A.C.I. (Italian Automobile Club), they are placed about 120 miles apart and thus can easily be reached in a day's driving without eliminating lots of sight-seeing. The cost for a double room is \$3.80 per night. In our trip, which covered about 950 miles, we made it a point to stay a few days at most points. There is a surprising variety of scenery and customs to be observed in the areas covered. And no small part of the enjoyment comes from sampling each area's food and wine specialties.

We started early in the morning from Rome over the Via Pontina to Terracina, stopping at the Temple of Jupiter for a view of the Tyrrhenian Sea, then proceeding to Saldo di Fondo, our first “Autostello A.C.I.” stop. The next day we turned inland to Cassino, which achieved notoriety during World War II, then headed south through Naples to Paestum along the picturesque Amalfi coast. After Paestum came Cirella and a drive through the kaleidoscopic Abruzzi. Then we entered the Province of Cosenza and drove through a part of Italy that strongly resembles Germany's Black Forest. On to Tiriolo and its Autostello, we inspected the handwoven shawls made there. Then we continued to the Sila, an unspoiled vacation paradise on a high plateau.

Through Camigliatello, with its carpet weavers who form an Oriental conclave, even in their speech, we continued through Spezzano, Spezzano Albenese and on to the shores of the Gulf of Taranto for a 90-mile coastal drive. Our goal? Castellana Grotte, a wild cavern of wierdly formed stalactites and stalagmites. To get there we left Taranto on our right and drove through Massafra, Martina Franca and Alberobello, famed for its circular houses. From Castellana, through Garganico we proceeded to Bari on the well-known Via Adriatica. Following the coast, we drove through Manfredonia to Rodi Garganico and the next Autostello. If you have time at this point, visit the Island of Tremi, a trip of slightly more than two hours. On to Marina di Vasto and its wonderful view of the Adriatic Sea, our shortest drive of the trip. From Vasto we made a 95-mile trip to Pescasseroli over winding roads through the wildest parts of the Abruzzi. Returning to Rome, we headed north to follow the Pescara—Rome road of Mille Miglia fame. Twenty-five miles outside of Rome, we stopped at Tivoli for a meal. There are exceptionally good restaurants, all on the main street.

Sound like fun? It is. To make your trip even more enjoyable, ask at the various Autostelli for brochures in English describing the individual provinces. This will help you decide which of the local attractions you want to see.

—JW



Color-splashed woolen scarves are a Tiriolo specialty.

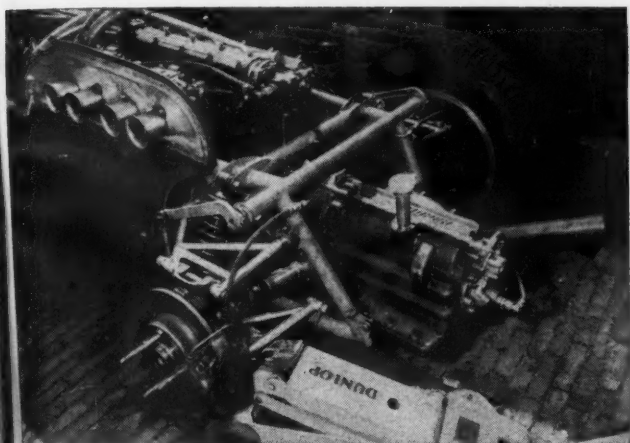


Despite increased mechanization, in the Abruzzi the donkey is still used.



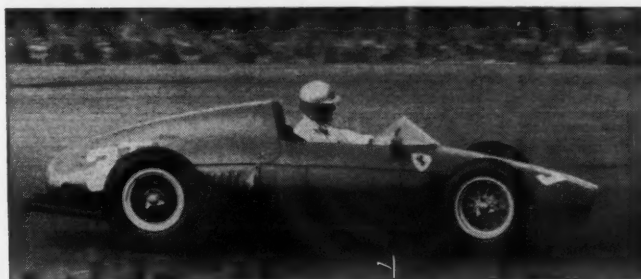
John Cooper has another winner in his revised '60 car, above at Zandvoort with victor Jack Brabham. Below is Cooper's new 5-speed box, coil-and-wishbone rear suspension with anti-roll bar, and part of new frame.

WEITMANN



You're backward with a front-mounted engine in G.P. racing today. Here's Cooper's latest and Ferrari's about-face, plus a novel Modena marriage of the two.

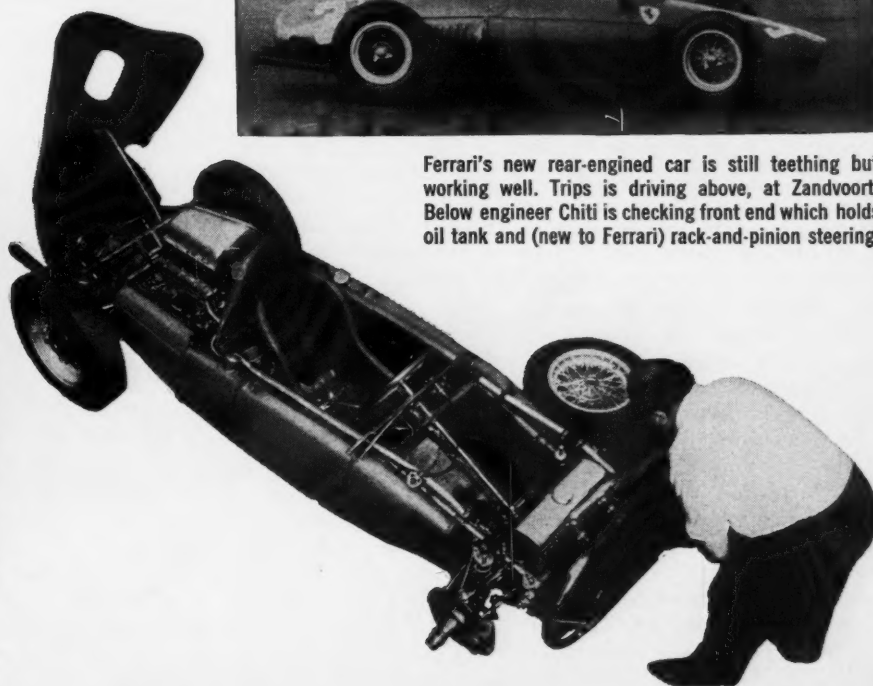
## REAR ENGINES RAMPANT



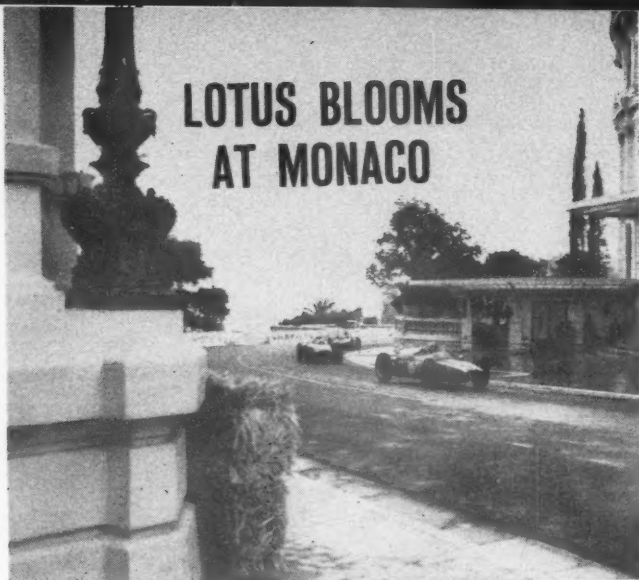
Ferrari's new rear-engined car is still teething but working well. Trips is driving above, at Zandvoort. Below engineer Chiti is checking front end which holds oil tank and (new to Ferrari) rack-and-pinion steering.



Claudio Castellotti—after the late Italian driver—runs Cooper powered by Ferrari Squalo (DCI, September 1959) with a Colotti gearbox.







## LOTUS BLOOMS AT MONACO

by Jesse Alexander

**On a circuit bounded by granite walls instead of grassy fields, Europe's top G. P. drivers lifted the curtain on this year's Continental F.1 season.**

► The traditional Monte Carlo Grand Prix was held this year on May 29th, a date on which the motor sport calendar is as crowded as it ever gets. The organizers decided to sponsor a Formula Junior race on the day before the Formula 1 contest with the result that garage space was hard to come by for the big and little racing cars on hand for motor racing's most colorful and spectacular weekend of the year.

Naturally, the greatest attraction for everyone was the first appearance of America's own Formula 1 car, Lance Reventlow's Scarab. Beautifully finished, following the "Indianapolis tradition" of racing car design in their solidity and perfect detail work, the two Scarabs were tremendously admired. But regrettably it was impossible to cheer them on during Sunday's race, for neither Stirling Moss, Lance Reventlow nor Chuck Daigh could get the F.1 Scarab around Monaco quickly enough to qualify.

Sixteen cars are allowed to start by the Monaco organizers, and no more. It was sheer wishful thinking on anybody's part to suppose that the Club might permit at least one car to start purely because they had come all the way from California. If there had been a shortage of entries at Monaco we might have seen a Scarab start but the race is always tight and difficult for just anybody to take the *départ*; the fight for those 16 places is a hot one. This year the pace was warmer than usual with the *slowest qualifying time within one second of last year's lap record*. Times on the first day were unbelievably fast and as it turned out they were all false, being exactly four to five seconds too fast. Finally the timekeepers got straightened out but it still didn't do the Scarabs any good.

Chuck Daigh and Lance Reventlow had a shock when the Coopers and Lotuses surged by them up the long hill to the Casino. The fact that the circuit is far from forgiving inhibited the two Scarab drivers—at least on their initial laps. They were also troubled by hydraulic clutch difficulties, making Reventlow's car difficult to shift, but were back Friday morning at 6 a.m. for the second practice session, when Lance invited Stirling Moss to try the car. Up to that time 1'50" laps were all either driver could get out of the Scarab. Moss knocked four seconds off this time because he's Moss and knows Monaco as well as anyone. Dunlop tires and softer springs were fitted, allowing both Daigh and Reventlow to get down to 1'47" and 1'48.5" respectively by the third practice session Saturday afternoon following the Formula Junior race.

Talking to Moss after he had tried the Scarab was illuminating, for he's driven practically every type of racing car that exists. Stirling first off said that the car had a long way to go before it would be really competitive, with much work to be done on suspension, and as everybody knows the 2.5-liter engine is just not putting out enough horsepower (230 at the very most). Moss liked the gearbox and driving position but could not praise the car's handling. In all fairness, perhaps Monaco was the wrong race for the Scarab organization to choose for their baptism. Next weekend at Zandvoort, or at Spa and Rheims, the cars may find themselves on better ground and the long faces in the R.A.I. pit may not be *quite* so long as they were at Monte Carlo.

Of equal interest this year was the rear-engined Ferrari in the hands of Richie Ginther for the weekend. The new car, just barely finished in time for the Grand Prix, was on the track briefly in the first day until the shift linkage broke a universal joint. Ginther wasn't able to get back behind the wheel until Saturday, when he managed to turn a very competitive 1'38.6". This equalled Phil Hill's best training time in the front-engined Ferrari and, as Phil pointed out, the new Ferrari must be markedly better in handling to permit Ginther to turn such a fast lap on a circuit he had never seen before.

Richie was full of praise for the car, saying that it felt extremely well-balanced and stable. From various positions around the circuit it looked "squirrely" to some observers but Richie said you just can't feel this condition behind the wheel. In short, great things are expected of it. The chassis is of course entirely new, but in the Ferrari tradition. Sizes of the tubes are the same as those in the front-engined chassis, and for Monaco a 2.1-liter twin-cam V6 engine rested behind the driver. A new gearbox case had been fabricated and placed at the back of the engine with the clutch and starting ring gear (shafts now being parallel rather than cross-ways) way at the rear. Disc brakes are inboard at the rear, with two ducts fitted to the bottom of the engine crankcase pulling in air to cool the discs. Fuel tanks ride amidships alongside the driver while water and oil ride up forward. Suspension is in principle the same as on the front-engined cars, with wishbones fitted all 'round. Rack-and-pinion steering is used on the new Ferrari.

PHIPPS

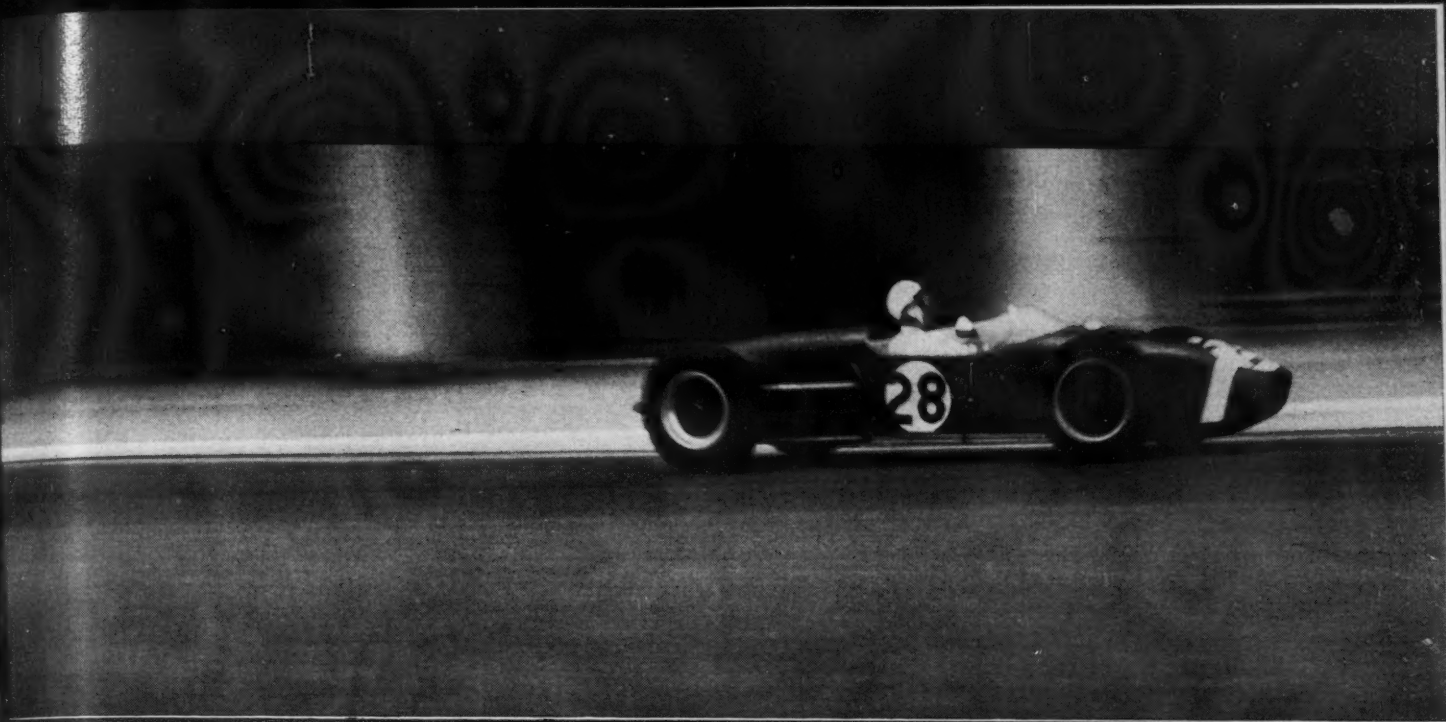


"My rear wheel's falling off!" shouts Dan Gurney as he rounds the hairpin. Like Bonnier's, his B.R.M. had rear suspension troubles.

The car is undoubtedly slightly lighter than its brothers and it could easily be the prototype of the most successful Ferrari ever, if present indications are any clue.

The Lotus Formula 1 machine for 1960 is *the* car of the year. Stirling Moss was driving Rob Walker's new car, not even a week old. Everything was "stock Lotus", neither Colotti nor Alf Francis having had the time to make any alterations. Moss and the Lotus are perfectly matched. We  
(Continued on page 90)

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Moss in new Lotus Climax drove what some observers call his best-judged race in 14 years of competition. He never appeared in a hurry but won race.

Moss tried the Scarab in practice and knocked 4 seconds off its time but car failed to qualify to debut due to lack of power, handling difficulties.





► Only five days after the Monaco Grand Prix, official training began for the Dutch Grand Prix at Zandvoort. Formula 1 constructors were as busy as the proverbial paper hanger not only getting their cars to Holland but also sending new engines (as was the case with B.R.M.) out from England.

Ferrari went back to Modena, did a small amount of further testing with its new rear-engined car and "dusted off" the Monaco cars. Needless to say, the Maranello race shop mechanics got little sleep. As it was, the rear-engined Ferrari arrived a day late in Holland and was driven in practice by both Hill and Trips, but engine malfunction forced them to sideline the car for the race. There is no doubt in anybody's mind, however, that when and if Ferrari is able to get this new car *au point* it will be markedly superior to the front-engined cars, which at Zandvoort in Phil Hill's own words were "worse than last year."

As at Monaco, the Ferraris gave the spectators their money's worth. Noisy, belching fire on the overrun, the driver working away at the steering wheel, sweat pouring off his forehead and down his back, hands blistering, the red machines were race cars in the truest sense of the word.

Ferrari troubles were manifold both in practice and during the race. Hill's and Trips's engines were not at all smooth coming out of medium-fast corners. Hill's ignition gave him difficulty on race day, eventually forcing him to retire. And Ferrari handling was never really right, although Richie Ginther seemed to like his car as set up for the race. Another trouble was in the transmission; it would pop out of gear without warning. So even though two cars finished (Trips and Ginther) it was a black day for the Ferrari team — already suffering the loss of Cliff Allison, who will be out of circulation for the rest of the 1960 season. Badly hurt in his Monaco training accident, Cliff is slowly mending but is still in the Monte Carlo hospital as this is written. Ferrari has unfortunately lost a strong member of the team. Cliff's accident was all the more tragic because he was "getting in the groove" so to speak, going fast even in the difficult red cars, and

wanted to have a real go at the 1960 World Championship. Ferrari morale couldn't get much lower than it is now.

Suffering similar difficulties at Zandvoort were Lance Reventlow's Scarabs. The two cars came to Holland in the back of a rented moving van, since their own truck was only finished — far behind schedule — the middle of the week before the race. Initial problem for RAI at Zandvoort was getting its chassis problem at least partly licked to enable it to qualify for the race. When I talked to Charley Daigh prior to official practice he was far from optimistic, having already turned a few "private" laps to find out where the circuit went. He found the car to be very unstable especially when braking for the bowl-shaped "Tarzan" corner at the end of the straight. Basically the springs they were using were still much too hard and the car just did not stay on the ground — confirming what Moss said after he tried the Scarab at Monaco. Softer springs are on order and John Cooper even offered them some of his. But geometry problems have crept in as the softer springs have been tried and considerable "sorting out" is required before the Scarab really begins to handle.

Despite all this, however, Chuck Daigh put in a very impressive performance in a last-minute attempt to qualify one car minutes before the final practice session was over. Chuck got in the groove, stuck his neck out, came in and said, "I think I can go a bit faster with a slightly higher gear." Twenty minutes before the end of training, Tom Barnes went into action and was underneath the car in a flash, putting a higher cog in the quick-change. With five minutes left, Daigh jumped behind the wheel and tore off, the husky Scarab engine's bellow resounding off the crowded grandstand and surrounding sand dunes. His first lap was a quick 1'38.5" and this was the best he could do; next came 1'39.4", 1'39.4", and finally 1'39.3". As at Monaco, the Scarab simply wasn't fast enough. However noticeable progress had been made and Daigh was turning times which even Ferrari couldn't attain on the first practice day.

Charley Daigh is a remarkable driver;  
(Continued on page 96)

Brabham rocks Moss as  
the G. P. Circus plays on ...

## HOLLAND'S SANDY CIRCUIT

by Jesse Alexander



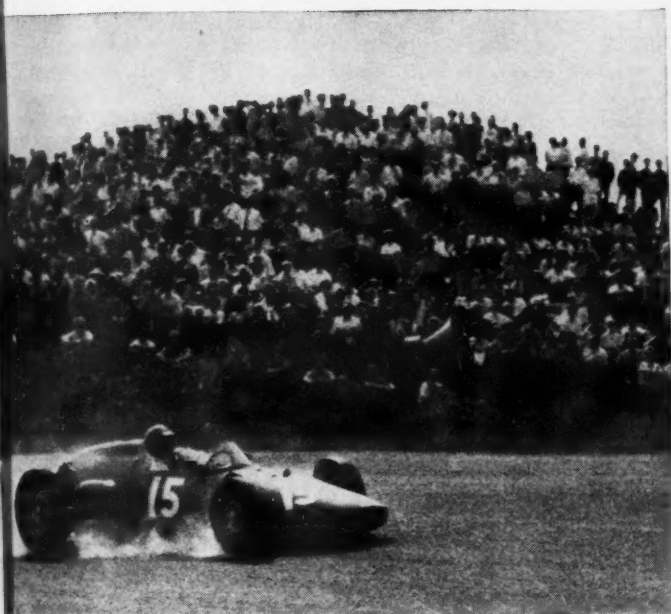
# DUTCH GRAND PRIX

Zandvoort, June 5, 1960

2.6 miles per lap, 75 laps

Position	Driver	Car	Time
1	Brabham	Cooper-Climax	2 hours, 1 minute 47.2 seconds (96 mph—new record)
2	Ireland	Lotus-Climax	2:2:11.2
3	G. Hill	B. R. M.	2:2:43.8
4	Moss	Lotus-Climax	2:2:44.9
5	Von Trips	Ferrari	1 lap behind
6	Ginther	Ferrari	1 lap behind
7	Taylor	Cooper-Climax	5 laps behind
8	de Beaufort	F. 2 Cooper-Climax	6 laps behind

Fastest lap: Moss, Lotus-Climax, 99.7 mph on last lap, new record.



An accident about to happen. With locked front wheels smoking Dan Gurney's B. R. M. hurtles toward escape road after rear brake failed.

Seconds after the start Jack Brabham leads Stirling Moss into the first turn as the rest of the pack strings out for the long grind.



Graham Hill asks Stirling Moss (left) how it felt to have his car hit by stone (held by Moss Senior) thrown by Brabham's rear wheel.

America's only G.P. car—Lance Reventlow's Scarab—lost a wheel in practice. Machine's hard suspension has caused handling problems.

WEITMANN





► Elegance adrift. The phrase might apply to an expensive yacht sulking quietly on calm seas, but it's also a succinct way of describing a Jaguar 3.8 being hurried home from the office, or back to town for the theatre or, in fact, from any Point A to any Point B by anyone who cares about the path in between and enjoys traversing it.

The Jaguar 3.8 combines, as no other car does, luxury and performance in a highly usable package. Beneath its leather and walnut skin lurks a heart of highly-polished steel and aluminum. When caressed gently at the accelerator pedal, it purrs calmly, propelling this "gentleman's carriage"

# JAGUAR 3.8

in a smooth, dignified manner. But like a Douglas Fairbanks hero, when hard-pressed it reacts in a violent, soul-stirring fashion. Wheels spin, tires scream with rage and two tons of ironmongery and precision woodwork hurl themselves down the road.

The "Three-Point-Eight" is the improved successor to the popular, distinctive 3.4 sedan. The essential changes are the bored-out engine which gives a change in name, an increase in rear tread of 3.3 inches which adds measurably to ess-bend stability, and a thinning down of all window posts to improve visibility significantly. The latter two, with subtle variations in rear body contours, give rise to the added designation, "Mark 2". In England, it is possible to have your choice of either Mark 1 or 2 according to your preference of privacy or vision and either 3.4 or 3.8 liters of engine displacement. In the American market, however, we are limited to such choices as wire wheels or discs, Borg-Warner automatic or Moss-built four-speed manual transmission, and if the latter, with or without overdrive.

Everybody gets the six-cylinder engine which has powered so many Le Mans winners and also the Dunlop disc brakes which have stopped them, lap after lap, though both are somewhat detuned to make them more suitable for road use. In its brief history, Jaguar has scored two mighty firsts in the automotive sales scene. With the XK 120 it was the first to offer lots of power (160 bhp) for a price that many, if not exactly the masses, could afford. With the 3.4 it was years ahead of Detroit in offering a compact version of its full-sized sedan. (The 3.8's wheelbase is 121½ inches shorter than the Mark IX's.) They are still ahead in providing full-sized performance (though in races the big-inch, stark Lark V8's give them a bit of a run) and quite alone in this class in providing elegance inside as well as out.

Geometrically the 3.8 is a "compact car" in the wheelbase sense (107.4 inches) but in price, performance and furnishings it has little in common with the herd of new models available. It costs just under five thousand, which puts it on a par with the cheapest Cadillac. Its performance well and truly deserves the term "sporting". Top speed is some 125 mph and acceleration beats the Ace-Bristol or Austin-Healey.

As on the 3.4 predecessor, the dashboard and window sills are made of walnut, polished beautifully to a sparkling luster. An improvement is that the instruments are no longer clustered at the center which had suited the production-line problems of building both left- and right-hand drive cars. They are now spread out directly in front of the driver where they belong. Each instrument is circular with plain white figures on a flat background, a "functional" concept which is in effective and dramatic contrast to the extravagance of the walnut panelling. Included are a tachometer (red-lined at 6000), a speedometer (with ordinary and trip odometer), an ammeter, and fuel, oil pressure, and water temperature gauges. The zero on the fuel gauge contains a red light which warns that the 14½-gallon tank

is down to one or two. A cigar lighter and a truly man-sized ash tray care for the smoker. The English push-button radio fitted was not in as good voice as the engine, a matter of tuning, we trust.

Each front seat has a full 6 inches adjustment fore and aft. Since the rails are inclined, the seats move up as they slide forward, on the reasonable presumption that short people have short legs and tall guys have long ones. The former will especially appreciate this feature as the rapid falling-away of the fender-line otherwise would tend to make accurate placement in tight traffic a touch ticklish, though the high-mounted parking lights do help to define the car's corners.

The front seats are separate but to term them bucket seats would be like calling the Queen's throne a chair. The deep foam rubber is covered with leather hide; our test car's were suede green to complement the richly dark-green exterior. Other paints available include three shades each of gray and red, two of blue, plus cream, black and, of course, British Racing Green.

Entry is easy and comfortable. Though you sit slightly askew with your legs a bit to the left and the 17-inch diameter steering wheel somewhat to your right, the position is very comfortable and its asymmetry is soon unnoticed. The wheel has two tapering spokes and a semi-circular horn ring. It is much nearer to horizontal than we are used to seeing in sedans, reminding us of the comfortable installations in Indy cars (of all things!).

To those well-acquainted with the 3.4, the improvement in visibility is striking. It was achieved by drastically slimming the windshield posts and the between-the-doors posts, in both cases by a full inch. The value of this sort of increase in visibility cannot be too highly stressed.



"Elegance adrift" might apply here. Jaguar's small sedan exhibited quite a bit of understeer both here and on SCI's 400-foot handling test circle.

There's logic too in the hoodless headlights and the finless fenders; their good aerodynamic form helped us get 19 mpg on a traffic-free, gentle run from New York City to Bridgehampton and return. If we'd used the full 225 horsepower frequently we would have paid for it, but it's pleasant to realize that unlike the gas-guzzling "power-packs" the 3.8 can be thrifty when you wish.

The car we tested was loaned to us by Mr. C. Gordon Bennet of Jaguar Cars Inc. Sporting three impressive badges (British Racing Driver's Club flanked by Road Racing Driver's Club and SCCA), his is one of the earliest 3.8's. Current production models intended for the United States feature a nine to one compression ratio, one ratio up on his car's. Though this raises both torque and horse-

(Continued on page 92)

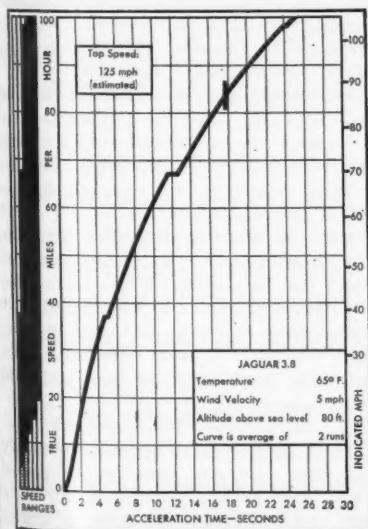


## ROAD TEST

### JAGUAR 3.8

Price as tested: \$4890

Importer: Jaguar Cars Inc.  
32 East 57th St.  
New York 22, N. Y.



#### ENGINE:

Displacement .....230.6 cu in, 3781 cc  
Dimensions .....Six cyl, 3.42 x 4.17 in  
Compression Ratio .....8.0 to one  
Power (SAE) .....225 bhp @ 5500 rpm  
Torque .....240 lb-ft @ 3000 rpm  
Usable rpm Range .....700-6000 rpm  
Piston Speed  $\div \sqrt{s/b}$  .....3465 ft/min  
@ rated power  
Fuel Recommended .....Premium  
Mileage .....13-19 mpg  
Range .....190-275 miles

#### CHASSIS:

Wheelbase .....107.4 in  
Tread, F,R .....55, 53.4 in  
Length .....181 in  
Suspension: F, ind., coil, wishbones; R, rigid  
axle, cantilevered leaf springs, radius rods.  
Turns to Full Lock .....2.2  
Tire Size .....6.40 x 15  
Swept Braking Area—disc .....488 sq in  
Curb Weight (full tank) .....3300 lbs  
Percentage on Driving Wheels .....44%  
Test Weight .....3600 lbs

#### DRIVE TRAIN:

Gear	Synchro?	Ratio	Step	Overall	Mph per 1000 rpm
Rev	No	2.96		12.73	6.2
1st	No	2.96	59%	12.73	6.2
2nd	Yes	1.86	45%	7.01	11.2
3rd	Yes	1.28	28%	4.84	16.3
4th	Yes	1.00	29%	3.77	20.9
4th OD		0.78		2.93	26.9

Final Drive Ratios: 3.77 with overdrive, 3.54 with automatic transmission.







## THE GENIUS OF A. J. WATSON

Continued from  
page 55

the month. The biggest change we made was to put a rug in the cockpit so my feet wouldn't slide around during the race! We didn't even have to cut the windshield."

Unusual equanimity is also part of the Watson genius. Watching A.J. stand at the pit wall, stop-watches in hand, relaxed poker face peering up the home straight-away to the fourth turn, it is difficult to determine which year it is. Whether it's 1955 as he brings in his first winner, the intense Bob Sweikert. Whether it's 1956, as his second comes home in front, the blithe red-head, Pat Flaherty. Or 1957, when he'd had high hopes with the heavy-footed Troy Ruttman, only to see the car drop out on the 13th lap. Or 1958, when one of his entries was wiped out in that awful 16-car, first-lap mess, and another sustained a huge gash. Or whether it's 1959, as he racks up No. 3 with the vastly-improved Ward. Or even 1960, when Rodger settled for second behind Rathmann's winning Watson-built car.

It all looks and sounds the same. When Sweikert took the checkered flag first, Watson remarked evenly to the crew: "Well, we made a buck today". When Ruttman dropped out in the first 20 minutes of the four-hour race, A.J. turned to his aides: "Well, we drink beer early today". Only an elocution teacher could detect the difference in tone.

A dry sense of humor is also in the genius package. A rival driver who couldn't get his \$25,000 worth of thoroughbred machinery running properly asked A.J.: "What's wrong?" Watson gave the car a second's appraisal: "Nothing that stopping in a service station for a 1,000-mile check wouldn't hurt."

He admits that his cleanliness is not only personal hygiene and is related to success—but he counters: "I'm not super-clean. I've been known to get dirty. I believe that if you're clean you see things better. I think there are some mechanics who are too clean. They're so busy wiping off things they don't have enough time to get the car going."

These are abstract assets. There are also technical skills and daring. Innovations have kept him a jump ahead of the pack. Cockpit weight jacks, Jacob's-ladder steering linkage, right-side steering, broad use of magnesium and fiberglass, shortened engine stroke—all these were brave new thoughts or departures from Indianapolis custom by A.J. Most of them evoked a sour chorus of "It won't work" from rivals—and most are universally in use today.

Steering mechanism in the Indianapolis speedway car used to be a mass of idler arms with multiple tie rods, either inside the frame or off the left spindle. Watson, seeking to simplify, attached a drag link to the right spindle, thus eliminating twenty pounds of unnecessary steering parts and decreasing immeasurably the possibility of parts failure.

When his boss, car owner John Zink Jr., of Tulsa, Oklahoma wanted a new car for the 1956 race despite the fact his winning '55 mount was itself new, Watson again put on his thinking cap in the off-season in his 40 by 44 shop in Glendale, California.

Between the two races the Indianapolis Speedway was to undergo extensive resurfacing. Asphalt was to be laid over the bricks on the back stretch, turns were to be repaved, a strip of pavement laid beneath the inside restraining white line. This obviously should mean faster speeds. Faster speeds might lead to critical tire wear. Wouldn't a lighter car develop less heat in the tires? Watson thought so.

He decided to use magnesium generally in the body of the car, with skinned-down aluminum sheeting. Magnesium had been employed in other components before but no one had used it in the shell. Because he does not like to bang metal himself, he hired two body men to pound out his ideas. He worked in fiberglass on the underpanels. He designed lighter-weight tubing, used light-weight metals on engine mounting plates, dashboard, and brackets. Something told him that a shorter engine stroke might be a good guess. For a reason he modestly advances—"I don't claim to be a great engine man"—he consulted a four-cylinder expert, Takio (Chick) Hirashima before reducing the Offy's stroke.

When Watson was through he had a racer that weighed 1,700 pounds dry, 200 pounds lighter than the other Indianapolis cars.

The next May the expected faster speeds did come. Setting the pace was Flaherty, driving Watson's light car to new qualification records, doing his four-lap, 10-mile trial at an average of 145.596 miles per hour, with a best single lap ever of 146.057. A.J.'s prophetic thinking came into play on race day. The big jump in speed brought on by the new track surface caused overheated tires and subsequent blowouts. There was a bewildering succession of spins and crashes that forced the yellow, slow-down light to be flashed a record eleven times. But Flaherty's light racer and heavy foot grabbed the lead for good on the 76th lap, holding it the remainder of the way. Seconds after Flaherty was given the checkered flag a cross shaft on the throttle fell off! Informed of the lucky timing of the failure, Watson grinned: "We're only supposed to build these things to run 200 laps. That's what it did".

The rapport between driver and mechanic is an element essential to success at Indianapolis. Watson's victories with different men each time (his Monza triumph also included a pilot new to him) attest to his talent for meetings of minds, despite sparse speech and instructions on his part. He takes no part in the practice of some mechanics and owners in "needling" a driver, "psyching" him, or urging him to greater speed, sometimes to disaster. "I don't believe in it", he explains. "I hope they'll go fast. The owner and I pick drivers that want to win. I go over charts of how drivers do in the race, how they were running, why their cars went out."

In his first year as head man in the garage—at 31—Watson was paired with Sweikert. They got along fine considering

the latter's volatility, except for one of the few occasions when A.J. made a departure from his calmness.

Sweikert, a good mechanic in his own right, wanted a double set of brakes. A.J. was agreeable. But Sweikert wished them installed one way; Watson had another plan. On this particular day Sweikert kept insisting sharply, forcefully. Watson tried maintaining an even strain, answering quietly. Sweikert continued yammering. A.J. suddenly bellowed:

"Get the hell out of here! When I'm ready for you to drive this thing I'll call you".

Sweikert, astonished by the character change, left the garage wordlessly. Their relationship remained unimpaired. When the race was only a few days away, the Watson's 18-day-old son, a blue baby, died back home in Glendale. Before he departed for California Watson explained to Sweikert how he wanted the car set up. Sweikert complied to the letter. In the race Vukovich, leading, was killed, and three other front-runners dropped out with mechanical failures, but Sweikert's "Pink Bathtub" functioned perfectly for the 500 trying miles.

When Watson took on Flaherty, the slender red-head had behind him two tenth-place Indianapolis finishes, suspension for "outlaw" driving, and a great urge to compete which had him at one point bumping another car at 140 miles per hour. He had smacked the Speedway's unyielding cement outer wall and had gone to the hospital with burns.

"We had to tell him how to drive around here", Watson grins at the memory. "He'd forgotten how. He was using brakes like mad and it wasn't until the night before qualifying that he learned. He learned even the morning of qualifying. Zink told him, 'Now, we don't care where you get off the throttle. Get off anywhere you like, but keep off the brakes and get back on the throttle at the right place'. The first lap he tried he sailed around at 145. He was shocked".

Watson, like others, had concluded that the secret to the Speedway was not so much how nervily late the driver lifted his foot at the end of the three-quarter-mile straightaways, but how soon he accelerated again in the turns. An even strain, by feathering the throttle, was Watson's idea of the best method.

But a long convalescence from a crash after his victory sidelined Flaherty and Watson faced the next "500" with Ruttman, young winner five years earlier and considered by many as the most zestful and adept of drivers. But Ruttman was spending some of that vitality partying. One afternoon in practice Ruttman remarked: "I don't feel racy today. When I don't feel racy I don't go out and run. When that return spring on my foot gets too big I don't go out". Watson remained silent. Though he knew the car was ready, he didn't push his driver.

A.J.'s patience paid off. Troy felt "racy" enough in qualifying to speed to the third fastest time and the outside position of the first row in the starting lineup. And in the race Ruttman fought a terrific fight for the lead at the outset. But he had to retire on the 13th lap because of an

(Continued on page 76)



# NEW!

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Signature \_\_\_\_\_



(Continued from page 74)

overheated engine. This drastic dip in his fortunes from two straight victories left Watson unmoved. That evening he told his family: "It was fun. That's the first time I could relax and watch the race".

A post-race examination of the car revealed that an air pocket had given the radiator a false reading of full. The radiator had been checked by a crewman. Watson believed that harder running by Ruttman in practice would have revealed the flaw, but he declined to place blame anywhere. He offered only: "That was a little boo-boo on our part".

Now came a year—only his fourth as garage chief—in which Watson demonstrated his industry and his grasp of Indianapolis technique. A lay-down engine—set only eight degrees from horizontal—had won the '57 race, the first time such an installation had done so. The "flat" power plant seemed to gain ground on the eternal weight problem by lowering the center of gravity.

But Watson wasn't convinced that he must switch; he would stick with his upright engine. Over the winter he overhauled the two Zink cars and built a new one for the boss. With time on his hands in the evenings he created still another chassis—for himself. He sold it to another Speedway owner for \$10,000.

The practice period in May, 1958 was an almost daily display of the highest speeds the 47-year-old track had ever seen. When the time trials were completed the front-row threesome included two of Watson's personally-supervised cars and the auto with the chassis he'd sold. A throng of 130,000 watched qualification records topple as the fastest front row in Indianapolis history was formed. Even more startling was the fact that all three cars were the handiwork of the same man.

Eventually Watson had a rare three cars to handle in the race. The prospect failed to shake his calm. There would be no team strategy, no manipulating, nobody taking it easy. "All our drivers will be told to go as fast as they can", he replied in response to speculation about how he would manage. "We expect Elisian will go faster; we're starting him with a lighter load". He organized A and B pit crews. What if all three cars had to stop at the same time? He answered dryly: "The third guy will have to wait".

Perhaps it was inevitable with the uncommon speeds and the supernormal tension from the practice duels between Ed Elisian and Dick Rathmann, the latter in the "extra" Watson car, that the race start would be what it was. Somehow, the first row was let out of the pits in almost total dissociation with the remainder of the field. In a climate of pressure, confusion, and sudden, contradictory signals the pack was roughly re-aligned and sent off—to the worst pileup in Indianapolis history. Neither Elisian, who had turned in the fastest single trial lap ever (146.508) nor Rathmann, who had won the pole position with the best average ever (145.974), would give way until it was too late. In the third turn of the first racing lap Elisian spun, carried Rathmann to the wall with him; the other Watson car in the first row was hit twice—and like toppling dominoes 16 automobiles became

involved as drivers fought for control.

Watson had lost one car before he could even see it again and a second one stopped in the pits at the end of that first lap, running but damaged. The three Zink mounts, which represented a total original investment of close to \$75,000, collected only \$19,000 that day. But Watson patched up the Elisian racer and 30 days later, in the irony of auto racing, it was driven by Jim Rathmann—Dick's brother—to victory on Monza's high-banked track. The triumph was worth 40,000 American dollars and made fascinating speculation at what might have been at Indianapolis for Watson if Elisian had not spun.

Jim Rathmann was so enchanted with Watson's car that he wanted one like it for the next Indianapolis race—and let his owner know how impressed he was. So Watson had another order for his off-season construction, but by now his extraordinary industry had begun to annoy boss Zink, who thought Watson should not be creating for other owners while in his employ. Watson thought he could do what he pleased with his spare time. The disagreement split them.

A.J. made no trip to the unemployment office. A wealthy greeting card entrepreneur, R. C. Wilke of Milwaukee, grabbed him. Wilke wanted a new car for the '59 Indianapolis race, and here was The Head, as his buddies call him, fashioning his seventh new race car in five years.

Though a flat engine had again won the "500" Watson still wasn't swayed. What Rodger Ward—his new driver—would get, as would Jim Rathmann, would not be much more or different, just the usual Watson classicism and care. Dry, the Ward car weighed 1,679 pounds. Its weight jacker was confined to the left rear wheel. He installed internal pneumatic air jacks, for faster pit stops.

Ward, new to Watson's ways, puzzled at how little advice and conversation he received from The Head. Later he was to say: "Here this guy gives you this automobile, and doesn't tell you a thing about what he's done. Most mechanics are sitting down with you and talking over everything on the car. He just says, 'Take it out'. When I first started driving for him I thought, 'Is this the guy who has that big reputation? What is this?'. But he had done things to the car; they were apparent when I got onto the track. Sometimes he exasperated me because he seemed so blasé, as if he didn't give a damn. He didn't seem to be working hard on the car—but everything was always done.

"I talked over our plans for the race a couple of times. I said I thought I'd lay back off the pace about 4 or 5 seconds just to see what was going on. I figured by the first pit stop the pattern of the race would be set and I'd make my move. All he said was, 'Driving's your department'. Before the race started he was as relaxed as he could be. He merely wished me luck, told me not to bend it—not to bang the machine and get hurt—and that was that".

The race itself, before 200,000 spectators, was almost that pat. Ward did hang back somewhat in the heated early going. On the 37th lap came that testimonial to Watson, all five of his models travelling in a row. But on the 85th lap Ward assumed com-

mand for the duration. He finished 21 seconds ahead of Rathmann with a new record average, 135.857 mph, and next day was paid an unprecedented \$106,850.

Three of the fastest pit stops ever seen at the Speedway by A.J.'s well-trained crew—accomplished in a total 72 seconds—kept Ward in front. Watson was in the key role—the man on the refueling hose, since refueling lags behind tire changing. Watson also snapped Ward out of some traffic hypnosis. Rodger had just cut one lap at 144 mph, but did the next at 135. A.J., clocking every lap, felt there was no excuse for this. He immediately signalled Ward to shake his trance, drive his own race.

At 300 miles, during a yellow-light period, Watson noticed that Rathmann was cutting Ward's lead margin, had in fact shaved it from 20 seconds to 8 in five laps that were supposed to be stationary. A.J. calmly ordered the following sign waved to Ward: "Cheater Rathmann".

The Head's audacity was unheard-of. The implication that the officials were failing to discipline the race worried Watson none. He knew he had only these few fleeting seconds to protect his man. No amount of protesting afterwards would help him. Ward took the cue, boosted his speed a bit. At the same time Rathmann eased off slightly, and the original margin was restored. That night Rathmann's crew chief, Jack Beckley, braced A.J. about the slandering sign. Watson answered: "What about it?" There was no harangue.

Watson rates Sweikert the best all-around driver he's had, on a premise that "the ideal driver is the guy who'll qualify fast and race fast". "Ward", Watson says, "does better where there's traffic". His rating of present-day speedway drivers? "There's Jim Rathmann. And Ward. And you have to include Johnny Thomson . . . Eddie Sachs".

What puzzles him most are drivers who can't duplicate laps. "A driver should know how fast he is going and a good one will. He should be able to remember how he did a good lap. There are some who can't remember from one lap to the next".

The Head does indulge in one subtle strategem with his pilots in practice. He contrives to put his driver on the track at the same time a leading contender is running, on the likelihood that a challenge will ensue. Watson and his driver both learn something—who comes off corners better, who has greater straightaway speed, how the opponent's car handles. A few minutes after the '59 race, before which Ward had been rated only third choice, behind Jim Rathmann and Thomson, Watson remarked: "We knew we could outrun Rathmann anytime because we had been testing him all month in practice".

Before the unfortunate 1958 field rolled away Watson did not spur Elisian. "He didn't say much", Elisian reported later. "He wants to race. I know it".

Watson recalls: "We didn't doubt Ed would lead the first lap. So we filled him with only 30 gallons of gas. We put on slick tires, 'cause that's what he wanted. He said he wanted to lead 'er as long as he could before coming in for a pit stop, so we figured that would give him two more laps. That's where maybe we made our super boo-boo". (One theory holds that with normally-scuffed-in tires Elisian

would not have had this tragic slide.) Watson never blamed Elisian, as did many others, including officials. He wasn't able to offer much comfort to his dejected driver sitting numbly in the rear of the pit area shortly after the multiple crash. A.J. had troubles of his own. On the abrupt pit stop of the still-running damaged car Watson (because of the twisted frame) could not open the gas cap except by resting his arm as a lever on the blistering-hot exhaust pipe. Nevertheless he did it, frying his arm, without uttering a sound. Afterwards, he spoke sardonically of the criticism of Elisian: "They fire you around here if you don't drive hungry". That night he consoled Ed: "Don't worry about it. We came to race".

A.J. quietly championed the ill-starred Elisian, whose career had included arrests for gambling-debt bad checks and racing suspension, even though it was extremely unpopular to do so. Watson wasn't afraid to be in such a small minority. He was in fact thinking about using Elisian in a two-man team with Ward for the 1960 race when Elisian was killed in a flaming crash.

Watson's softly-stated independence extends to his car owners. He says today of Zink: "We're all right. He shook hands with no hard feelings. He said, 'I don't want you to be bitter. You may work for me again someday'".

Wilke, too, was a bit peeved when Watson built and sold (for \$13,000) the Rathmann auto. On the subject of owners The Head speaks lightly: "The ideal owner is a guy who has money . . . who doesn't have to make money out of racing. He's in it for the love of it. Also, the ideal owner is a guy who doesn't come around". He chuckles here. "I get twitchy if my boss . . . Owners don't want you selling cars to people who can beat you, but it doesn't make any difference to me".

His success at building does not tempt Watson to turn manufacturer. "I have no intention of operating a factory. I might get \$50,000 in deposits and then end up taking the gas pipe if the cars didn't work. I'd like to own my own car someday but not now. I had a good deal with Wilke in the '59 '500'. He and I split everything after expenses. We made over \$30,000 each. I was lucky there. If I'd owned the car I wouldn't have done so well". Wilke, besides being peeved about A.J.'s extracurricular activities, has done something concrete about them. For 1961 he has signed the master of the 500 race car to a contract that calls for the construction of two new Leader Card Specials—and only two. In other words Watson is bound contractually to limit his 1961 500 building to only these two cars.

But in the five months between the end of his racing last fall to the time to return to Indianapolis again last spring Watson slaved like a factory. He built four new ones—for Wilke and three opponents—and overhauled two other cars in the Wilke stable.

While the fact that he has won with different drivers would support an argument that the mechanic . . . at least in his case . . . is more important than the driver, Watson rejects the distinction. "The driver is more important", he responds. But

(Continued on page 78)

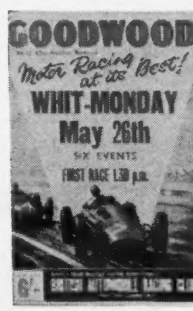
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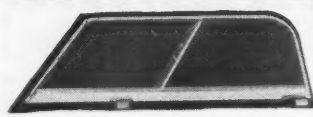
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78/SPORTS CARS ILLUSTRATED/SEPTEMBER 1960

(Continued from page 77)

one who has never driven for A.J. indicated how coveted his cars are when he declared: "I'm not going to race at the Speedway again unless I can get into a Watson car. You feel so safe in them".

Does all this esteem, genius, cleanliness, and care for detail portend a formidable husband and father around the house? "What", Joyce Watson is asked, "does all this precision make . . ." But she cuts in wryly: "It makes him late".

Watson leaves his meticulousness at the race track. "He's not the demanding type", Joyce reports. "He's a calm character around the house. He has only about one blow-up a year. He's the kind who feeds the kids, gives them their bottles. He's a good father. He never gets mad at the kids unless they grab his newspaper".

The potential grabbers are Susan, 2, and Linda, 5. When they start climbing over Daddy and his newspaper he calls them "house apes", but tolerantly. Linda unwittingly provides needling material for Daddy's cronies. She likes to buy ice cream pops. But she eats only the chocolate coating, licking it to the ice cream. Here she quits and wants Daddy to finish it. She becomes quite angry if Daddy demurs. So the man whose garage is surgically anti-septic appeases her by eating the remainder. This prompts from his intimates a mock horrified: "How unsanitary can you get!"

Like most southern Californians (Watson is a native of Mansfield, Ohio but went to college on the West Coast, and remained), he lives in a sports shirt, in the house and out. Despite the frequent round-the-clock demands of mechanical overhauls or long hours towing a race car cross-country, no one can remember A.J. ever needing a shave or a haircut. Before he walks out of the garage for the day he reaches for a cloth to dust off his shoes. (A friend says here: "But he's no Grandma".)

Watson doesn't let fall many words at home, his race-track efficiency carrying over here. Often when Joyce, who herself is somewhat saving of speech and who matches her husband in his dry darts of humor, seeks to draw A.J. out about something around the house, he answers: "Oh, that's too little to talk about".

"He's always thinking", Joyce goes on. "Whenever we drive to a race we don't talk much. He's a thousand miles away thinking about something".

On one occasion this was almost literally true. Mrs. Watson, like many mechanics' wives, often drives the family car back home from Indianapolis while hubby leads the way, towing the race car with the pick-up truck or the station wagon. On this day the Watsons were passing through Kansas City. She ran out of gas. He, thinking, and holding all the money, drove on, thus lapsing, it must be admitted, into the classic image of the absent-mindedness of geniuses. Many miles later it did dawn on him, and he launched a police search for her.

Mrs. Watson sums up the genius she lives with: "He never brings his racing home. Bad years don't bother him. He figures they're good for him; keep him from getting a large head. He figures that's racing. He doesn't put up with the genius stuff. He says it's all luck".

-AA



## TRACK REPORT: WAINER, DAGRADA, VOLPINI

Continued from  
page 30

Not that the Dagrada doesn't handle well! Its simple all-coil suspension gives a flat, well-balanced feel and never threatens to do anything unexpected. The steering speed is quick enough to cope with the car's response times and the brakes are strong and steady, though the non-bedded woven linings made this car a little sensitive to light applications. It's possible that this car doesn't have the sheer cornering traction of, say, the Lotus or Volpini, but it may be easier for some drivers to handle. That engine, though, takes the Dagrada right out of the novice class. The car's least happy feature is chassis workmanship and finish of a low order.

Of these three cars the Volpini offered yours truly by far the most cockpit comfort. The seat position is bolt upright, which isn't necessarily ideal but at least leaves some length for legs. All I needed was to have the wheel raised an inch or two away from my thighs, for perfection—an operation regularly performed by one Volpini dealer, Steve McClellan of Automotive Specialists, Inc., Farmingdale, Long Island. Steve also cuts down the front of the full windshield and spreads it apart at the back to give more shoulder room. Interior trim is nicer than most, with a

crazy quilted dashboard around the big Jaeger tach and two smaller gauges. For my big feet the throttle and brake pedals were too close together, a fault that's easily put right.

The Volpini's long, low nose profile and high driver stance give you a great feeling of control and of the car's relation to the road. You're really in charge here. Behind you there's a reassuringly high headrest-cum-rollover bar, which also houses the gas tank filler, but no rear-view mirrors are fitted as standard. Out on the track this proved to be a completely satisfying automobile to drive, with handling that's nearly neutral and tending toward understeer when pushed hard into a corner. Power will bring the back end around if you want to—or if you *don't* want to if you're not careful—with which the steering is quick enough to cope easily. Like the Dagrada or other live-axle cars, though, the inside rear wheel in a corner can run fresh out of traction just when you want it most. This is where a car with independently-sprung driving wheels can score, all other things being equal.

So sensitive are these light, responsive cars to chassis subtleties that the first three Volpinis imported varied widely in handling qualities. One was tail-happy, one "plowed" or understeered, and our test car was right in between. Oddly there were no obvious differences among the cars, like suspension layout or engine placement, so it could all be laid to refinements like front-end alignment and tire pressures.

Volpini's reworked Fiat engine produces performance that's barrel-chested both in

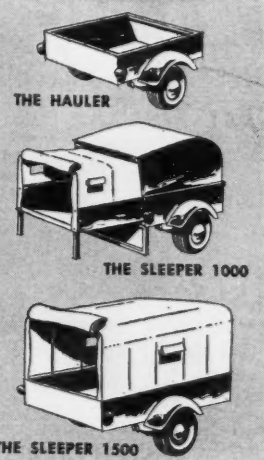
potency and sound. The big, flared exhaust pipe curls up and cuts off ahead of the right rear wheel, emitting a healthy bellow that leaves your right ear aching for hours afterwards. Acceleration is in keeping, this being one of the most flexible and responsive hopped-up Fiats we've sampled, and deceleration was just as effective. Forgiving, slow to take offense and almost always on your side, the Volpini struck us as being the best all-around car of these three. Especially in view of the price, the general level of workmanship on the engine and chassis is commendably high.

On none of these cars is the instant accessibility to remote parts of the mechanism as good as most Dzus-fastened British Juniors offer, but, on the other hand, the basic layout is usually such that you can reach everything you need through the engine lid or other built-in access hatches. Thanks to the enthusiasm of Marty Biener's operation and the complete co-operation of the makers of the cars, service, parts and maintenance are minimal problems. Now that race organizers are enforcing the Formula Junior rules by weighing the cars at major events, this exciting class should really be on its feet. If you're holding back to see what the "hot one" will be, before you jump into Juniors, we feel they've just about hit the roof right now. Differences in tuning and "set-up" among these cars—and driving ability—seem more significant now than variations between makes! As new ones come along we'll report on them and drive them for you whenever possible. In the meantime, don't miss the fun of Juniors.

—KEL

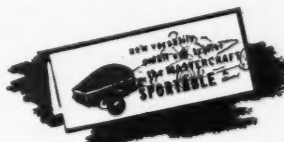


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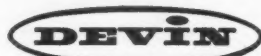
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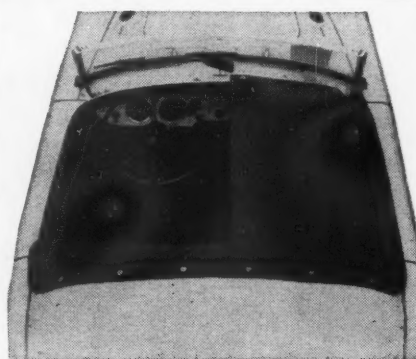
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## THEY DON'T BUILD 'EM LIKE THAT ANYMORE

Continued from page 37

I mean, they went overboard with the ideas and Detroit had no trouble laughing them off the books. But, by 1961, somebody'd worked out a national registration fee deal which cost you so much a foot each year. Surprisingly enough, they figured it on the square foot right off the bat too. That was rough on a lot of people who couldn't afford to keep their cars on the road, but it did clean a lot of junkers off the highway.

About a year later, the National Safety Group got a ruling passed to make 10-inch wheels the minimum that could be used on 6000-pound passenger cars. That really flipped Detroit. Since they couldn't build 'em any longer or any wider, they'd been planning on lower layouts for the '62 market. On top of that, the insurance companies had gotten up enough nerve to do something about their end of things as well. The Council of Underwriters added a clause to all auto policies allowing the companies to charge an additional premium for certain cars, or makes of cars actually, that were substantially more expensive to repair than others. And, to make things even worse, the N.S.C. amended the registration law by adding a flat fifty bucks annual fee for all cars with more than 300 horsepower. Naturally, that's all changed a lot since then too. Now, you know, it's against the law to have more than 70 horses under the hood.

Well, anyway, Detroit didn't sizzle long. They all got together and, in '63 I think it was, formed the D.U.C. That's the Detroit United Corporation. They figured to put some real pressure on the lawmakers and buck public opinion that way. Why, I remember how they bought up every page in LIFE magazine one week and the whole thing was filled with ads and picture stories like LIFE uses. Only they were all about what they wanted to build for the American public because they knew best what we really wanted to drive. Not many copies of it ever got around, though. Friend of mine showed me his copy which is a kind of collector's item, I guess. The Post Office got wind of it and clamped down before the issue could be distributed.

So, to get back to the car size thing. All the time our cars were getting smaller, imported cars were growing larger and larger. Finally, in 1965, the imports beat out Detroit on total sales. Really! Oh, the Detroit bunch had been fooling with a couple of jobs they called small cars, 105-inch wheelbase stuff and all that. But nothing as good-looking or that would handle as well as the foreign cars being built then. They had a lot more know-how from overseas for small packages to begin with and, by then, their cars had become large enough to interest more and more Americans. A.T.C. was making . . . oh, American Transportation Corporation. They were the old American Motors and Studebaker-Packard and Willys bunch who joined forces around that time. They were

still pushing their Lark models hard enough to romp all over D.U.C. sales even then.

I bought my first Lark that year, or took delivery of it, I should say. Had to wait almost two years for it. Drove it just about three years and got back \$400 less than it cost me when I traded for a new one. Thought I really had the depreciation business licked. But, a year after I bought my second Lark, D.U.C. brought out their Yankee line. It was sink or swim with them and they finally decided to build a small car. All of 'em had an 80-inch wheelbase, an air-cooled engine in back and a four-speed manual shift. Just a four-passenger sedan and a sports roadster were made at first, but a station wagon was added in '69. Everybody began buying the damn things and, before I knew it, Larks weren't worth beans anymore. By 1970, A.T.C. had folded up and, since the imports had already gotten too large to suit me, I traded for a Yankee sedan. Man, did I ever take a licking on that deal!

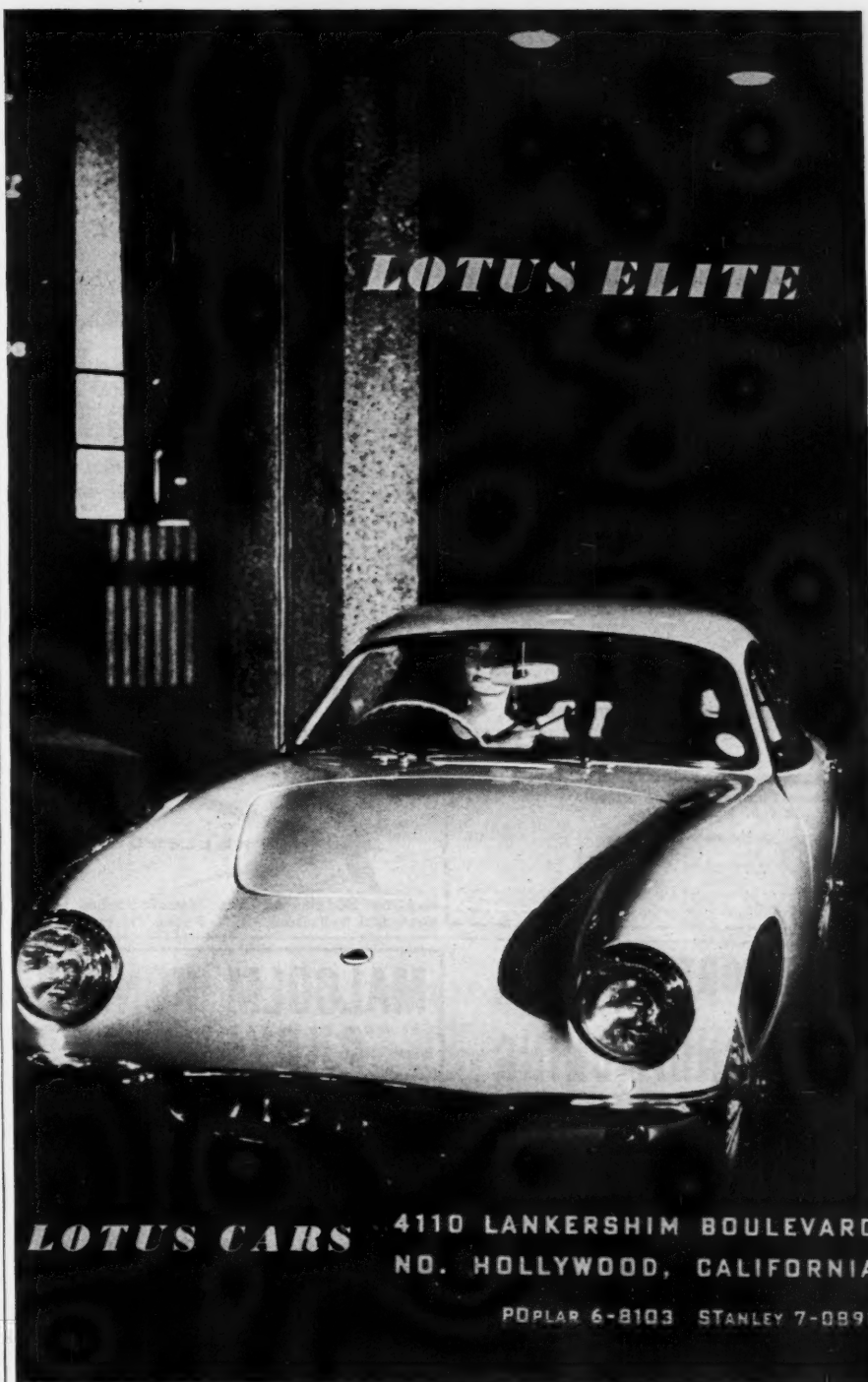
D.U.C. stuck with the same body styles and so forth ever since, you know. Oh, maybe there's a couple new colors out one year and, like last year, disc brakes or something, but mostly the same thing. Good idea, of course. Avoids that old-hat look every year a new style comes out. Like they do with the foreign cars now. Hah, those just seem to go from bad to worse. Kept getting larger and larger with more and more horsepower and automatic gadgets thrown in each year until you couldn't drive the things; they actually drove you! Since a lot of 'em had automatic transmissions as standard equipment the gas mileage was pretty rotten too. Still, some people, like the Sloans I was telling you about, thought those big imports were some kind of social symbols, a mark of prestige or something. Why, it was worth your life going out for a Sunday drive. Those big barges would practically run you off the roads and then crowd things even more in a parking field. Most of 'em were over twice the size of a Yankee station wagon. Can you beat that?

Well, those National Safety Group fellows finally had their fill of accidents and all that being caused by those big foreign jobs. So, last year, they decided to make it illegal for anyone to import more of 'em. Most of the dealers were already fed up with sales anyway and had no real squawks, but the U.N. thought the problem ought to be discussed among the manufacturing nations anyway, just for appearances. It seems that, aside from kicking the props from under foreign car sales here, the Yankee line was also accounting for almost 20% of all new cars being sold abroad too.

By the way, which Yankee are you driving, Oh? Well, uh, what do you drive? No, no, of course I won't laugh if you . . . what? Right in your garage? Well, how about that? Up on blocks all this time, eh? Why fella, those old Thunderbirds have been almost collector's items for years! Sure they have! Oh, they let 'em drive around in parades once in a while if they're locked in low range, of course, but I haven't even seen one for a long time.

Say, Jane! I'll be back in a little bit. Clarence and I are going to take a walk over to his place. Has something he wants to show me.

-RTP



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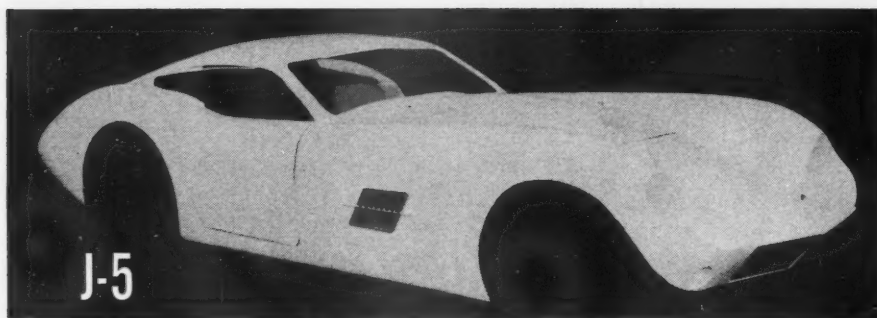
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## HOTTEST HEALEY 3000

Continued from  
page 39

demonstration car we borrowed had the same 3.91 to 1 axle ratio as the standard model SCI tested last year, the only discrepancy being in the overdrive ratios — 0.778 to 1 on the Ruddspeeder, 0.822 in the other case. Acceleration comparisons are therefore legitimate, though it's probable the stock sample had had a better break-in; Rudd's engine had done 21 hours on the bench and practically nothing on the road when we took his car over.

Here, then, are some specimen acceleration times, taken on surfaces that were perceptibly damp after recent rains but of inherently good traction properties (figures in brackets are from SCI's regular road test report): 0 to 50 mph, 6.2 seconds (7.3); 0 to 60, 9.3 (10.9); 0 to 70, 11.9 (14.2); 0 to 80, 15.4 (19.2); 0 to 100, 25.8 (not recorded for the standard car by SCI but a respected British contemporary made it 32.8 seconds); standing quarter-mile, 17.0 (17.8).

More accustomed to the car, as he is, Ken Rudd claims he can get down to 16-and-small-decimals for the standing quarter any time he likes on a dry road, and was only prevented from demonstrating this ability by the fact the available roads were never dry while the car was at our disposal. In equivalently expert hands, and under fully dehydrated conditions, it follows that probably all the acceleration figures quoted above would take a shave. As tested, with two persons aboard, the car weighed 2786 pounds.

### STARTS AND TOP SPEED

Unlike the engine, the converted A-H's transmission had a reasonable road mileage on it when we borrowed the car, but nevertheless the low-to-second shift was still a bit stiff. So to evaluate acceleration in terms that would be unaffected by this, we clocked her over these gaps in normal top, giving 20 mph per thousand rpm: 50 to 80 mph, 9.5 seconds; 60 to 80, 6.0 seconds. A standard 3000 takes 2.4 seconds longer through the latter band.

Reverting to standing starts, two comments are relevant. First, the enlarged clutch (up from 9 to 10 inches in diameter) introduced concurrently with last year's bigger engine, showed no sign whatever of fatigue or resentment when subjected to a series of fairly brutal takeoffs. Second, the Rudd-modified rear springs had an unmistakably beneficial effect under these conditions; you just couldn't produce axle dance or related misconduct at the back end.

Circumstances made it impossible to confirm, by timing, Rudd's claim that this 178 bhp Healey is good for approximately 130 mph. On Britain's one and only motorway, the much-publicized M1, full-stick in overdrive top produced a fast and rather noisy rush to the equivalent of an indicated 126 mph on a speedometer that was actually calibrated to only 120. M1 being designed as a series of gently merging curves rather than linked straights, and our fellow

travelers being seemingly in concerted rebellion against lane discipline, we never did hold the pedal against the floor until the needle's movement finally desisted.

Leaving out bottom and overdrive top gears, the mathematical equivalents to 6000 rpm on the remaining four ratios are 64 mph in second, 92 in third, 119 in overdrive third, 123 in normal top, and we repeatedly ran her up to the 6000 mark on each of these gears. If the C-series engine suffered any pain in the course of these exertions, it didn't let on, except maybe once, when we inadvertently went a shade past 6000 in second and floating valves yammered a word of warning. This particular engine, Mr. Rudd told us, had been run at 5500 rpm for three hours in a row on the bench, with no resulting valve stretch or other measurable ill effect.

#### SMOOTH UNDER THE HOOD

In what might be considered the problematical sector of the rpm range, between 5250 (where the tach is redlined on standard 3000's) and 6000 per minute, this engine isn't a degree less smooth than at more habitual turnovers. Whizzing around at its Ruddspeed peak, it merely produces more din from two sources, exhaust and fan. The latter, we were told, is dispensable under virtually any conditions except stop-start running in city traffic and summer temperatures.

With the top up—which is how we had it all the time, to keep the English Winter out and in the belief it would cut drag—noise from the twin-pipe exhaust system seemed moderate up to 4000 or so and thereafter increasingly immoderate. To bystanders ears, immoderacy sets in earlier.

#### MILEAGE IN A MALE CAR

We used two different fuels, both of them putatively 100 octane, in the A-H; on one of them the engine knocked moderately but distinctly without much provocation, on the other it never did. Average consumption, excluding the acceleration timings but otherwise missing few opportunities for using the full performance, was 15.4 miles per U.S. gallon. The oil thermometer, one of Rudd's two instrument options, is graduated to 230° F and redlined at 212. The highest reading we saw, right after the acceleration timings, was around 180 degrees.

The test car had the suspension and brake modifications listed earlier, and if we were buying a 3000 there isn't one we'd voluntarily forego. Good as the braking is on the standard car, the servo improves it, cutting pedal pressures wholesale without any loss of sensitivity.

On good surfaces, the balance and feel of the car didn't appear to be altered one way or the other by the non-standard suspension features. The overall effect of the competition dampers at the front and modified spring rates at both ends was to subdue cornering roll very markedly. Naturally, a fairly considerable loss of riding comfort is involved, particularly at low speeds and on bad surfaces, and in time, we suspect, this might have an indirect payoff by breeding body rattles and creaks. But Rudd is advisedly catering for a clientele that's male in the wider sense of the word, and specially for males who rate the delights of competition and really fast highway travel above self-featherbedding.

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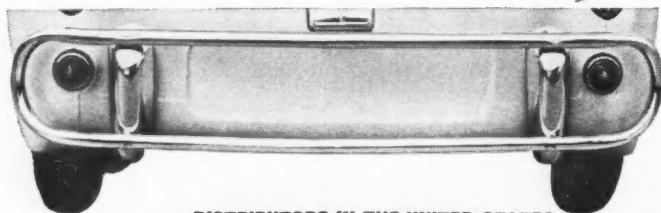




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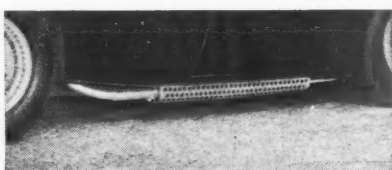
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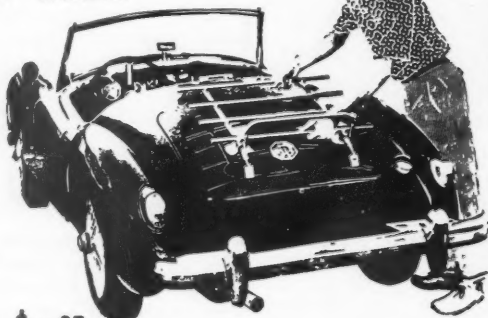
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## CHANGING A ONE-TRACK MIND

Continued from  
page 35

late Mike Hawthorn at a dinner celebrating the presentation of a Sportsman of the Year award. "Why don't you have a try with cars?", suggested Mike in tones loud enough to be overheard by Mr. Vandervell, who happened to be sitting close enough to overhear loud tones. The Vanwall's benign papa caught the ball and tossed it back. "Yes, why don't you, John? I'll give you a tryout any time you like".

"I thought he was just being polite", Surtees told me, "so I didn't press the point". Then, some months later, while he was still trying to estimate the politeness/sincerity ratio of the bearing millionaire's casual remark, John heard Aston Martin was about to put on a talent-finding party at Goodwood. He put out feelers to Feltham and team manager Reg Parnell said his company would be a pleasure. Hartle (bear the name in mind—you may be hearing more of it in these and kindred columns) was included in too.

There was a note of something like awe in the verdict Parnell gave me on Surtees. "Quite fantastic", he said. Following the initial audition, in which John easily outshone the several other cadets present, A.M. paid him the compliment of inviting him along for three further sessions. On the Astons, easier cars for a novice to master than the old-type Vanwall was subsequently to prove, he never made a single mistake. Reports in the British press at the time credited him with coming within two seconds of the previous best-ever Goodwood laps on the DBR1/300 (by Moss and Salvadori), but in fact, says Reg, he did even better, shortfalling by only about a second per 2.4-mile lap. More remarkable still, his fastest trip (afterwards closely approached more than once) was clocked very early in the proceedings.

"We were very disappointed not to get him for our team", Reg said, and there was something in the way he said it that made me think "piqued" would be an apter word than "disappointed". A tribute like "quite fantastic" is the more impressive when it comes, so to speak, from between clenched teeth.

Apart from about ten laps on the G.P. car, late in the trials, all of Surtees' Aston motoring was done on the sports-racer. Well endowed as he is with the grand talent pour le silence that Carlyle admired in the English, John wasn't exactly eloquent in comparing his reactions to the two cars, except for saying "it was nice to be able to see the wheels" of the G.P. machine. One thing at least he has in common with the late Fred Dixon, a prewar British motorcycle star who made the switch to cars with sensational results: the fact that the established experts in the new field adopt a particular method or technique is not sufficient reason for him doing it that way—if something else comes naturally to him he'll try it no matter how ham it looks. By this token,

first time out on the sports Aston he insisted on sitting hunched up close to the wheel. "Inside five laps", he told me, "my arms were nearly falling out, so I shunted the seat back three or four inches and really started getting comfortable." By deduction from Reg Parnell's account, this must have been the stage he got comfortable enough to lap a single second outside Moss/Salvadori times.

Before we try dredging the diffident Surtees's vocabulary for links between the arts and sciences of race riding and driving, let's take a brief look at some relative rating factors for two- and four-wheelers, and also compare motorcycle and car capability in terms of lap times for circuits common to both. On a power-to-weight basis, the car excels by quite a margin. MV Agusta isn't very communicative about output figures but a fair estimate of its current 500 cc four's yield is 62 bhp. Starting-line weight is closely around 640 pounds, so that makes the p.-w. ratio 217 bhp per ton. For the F.1 Cooper-Climax, assuming an all-up weight of 1155 pounds and an output of 240 horse, the corresponding figure is 465 bhp per ton. But of course the disparity is to some extent redressed (to what extent I've no means of knowing or calculating) by the cycle's much smaller frontal area and lower friction losses in its chain transmission, a system celebrated for efficiency.

Silverstone and Monza provide relevant lap speed data. Motorcycle and car records for the former stand respectively at 98.26 mph (McIntyre, Norton) and 105.37 (Behra for B.R.M., Collins for Ferrari, Salvadori for Aston Martin, all equal). Surtees himself holds the bike record for Monza at 119.20 mph, and Phil Hill turned 128.13 last September with a Ferrari.

In attaining almost overnight a standard of proficiency on cars that Parnell found "fantastic" and Yorke "staggering", but which he himself refuses to recognize as meaningful at this early stage of his apprenticeship, Surtees could have derived benefit from (a) five or six years' road-going familiarity with such metal as Porsche, Aston, 300SL Merc, 507 BMW, or (b) his motorcycle race experience, or (c) both, or (d) neither.

He dismisses (a) almost without hesitation. Good as the BMW is—and he rates it above all other sports cars in his ken—it's taught him practically nothing he could exploit at racing speeds on, say, a DBR1/300. (The G.P. Aston in turn, incidentally, he found so utterly different from the sports-racer that he had, he says, to start learning all over again.) Item (b), cycle racing, has had a certain value, conditioning his judgment of braking distances and cornering lines. He confirms the generally-held axiom that slow turns are negotiable faster on a car than a bike but says it's harder to be specific about really fast curves. Accurate mental estimates of cornering speeds aren't possible on either type of machine at upwards of two miles per minute, and it goes without saying you're too busy under these conditions to get even a sneak tachometer reading.

On merging or closely neighbored turns, alternately left and right or vice versa, he thinks the cycle scores. A seasoned rider can flick it from bank to opposite bank faster than it's physically possible to bite

off a four-wheel drift one way and get it going the other way. He instances Clermont-Ferrand, home of the motorcycle French G.P. and the F2 Circuit of Auvergne, as a course abounding in this sort of cycle/car equalizer. The figures bear him out, too, for there was only 3.09 mph (in the car's favor, admittedly) between last year's Clermont-Ferrand lap records by Moss on a Cooper-Climax and Surtees on MV. F.1 cars, for which this Gallic Nürburgring don't cater, likely wouldn't be more than fractionally faster than the F.2's over such wiggly terrain, so the illustration is valid.

Cornering in a drift, says John, is possible on two wheels when you know how. On certain types of very fast curves you just lay her into it until both ends start sliding, then maintain your balance and line by some elusive process of prestidigitation that he was at a loss to explain and I probably couldn't interpret if he did.

His chief difficulty, he said, coming off cycles onto racing cars, was transferring the delicate sensitivity needed for throttle and brake control from his hands to his feet. Carefully cultivated aquirements in this department were not only wasted—here he had something to unlearn. More or less apropos, the 360-degree spins mentioned by David Yorke didn't take Surtees by surprise. Conditions varied fairly widely during his Vanwall trials (conducted at Silverstone as well as Goodwood), and the only way he knew to find out how much lateral G the car would hold still for was to press it to—and beyond—the limit. If you don't do that, and repeatedly, to cover an adequate range of surface humidities, how do you learn what the limits are?

In the same breath, though, he avows a determination "not to start running before I can walk". So if he classifies a Vanwall lap of Goodwood in 1' 27.6" as walking, it'll be interesting, won't it, to watch him when he starts to run?

For these walk-first inhibitions, John has his father's teaching to thank. Papa Surtees, Jack by name, was a famous sidecar tamer on grass and road circuits in prewar and early postwar days, and John, in his middle and late teens, rode as passenger in his old man's chair around the time that he, junior, was first finding his feet on racing solo cycles. Jack, now a spry sixty, is solid common sense from the bootsoles up, and nursed his kid through his novitiate and starlet stages with patient care and devotion, constantly drumming in the lesson that you don't win races without finishing and you don't finish on your left ear. Jack didn't give John the nod to go ahead and win races until he'd had plenty of practice at losing them—though usually from a point of vantage in the winner's slipstream where he could study and learn from the best-qualified teachers.

Surtees senior is right behind John in his car racing aspirations, but the latter no longer needs paternal take-it-easy admonitions—taking it easy, in the limited Surtees sense of the words, comes naturally now. A batchelor with two big motorcycle dealerships of his own, John lives with his folks, and he and papa spend much of their meager leisure engrossed in car race literature, boning up on a neglected side of the

(Continued on page 86)

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86/SPORTS CARS ILLUSTRATED/SEPTEMBER 1960

(Continued from page 85)

family education. SCI is among John's favorite founts of knowledge and wisdom. "Teaches you a lot", he says.

By the time this appears in print, if you catch the British race reports you'll have seen for yourself how Surtees measures up to adjectives like "incredible" and "staggering". On the eve of his debut, though, there are skeptics here in England. Look how Geoff Duke, another motorcycle World Champion, fizzled after about a season, they point out. And was Duke all that hot while he lasted, they ask?

The answer is that Duke quit cars and went back to motorcycles for two reasons, neither of them a reflection of failure or lack of potential on four wheels. Primarily he got out because he couldn't take the ballyhoo the British press and other nonsense disseminators built up around him; he could ride the waves of personal publicity resulting from solid achievement on cycles but it turned his stomach to be ludicrously lionized in a trade he considered he had yet to learn. Secondly, I doubt whether car racing paid him as well as the cycle game; as a professional, he'd have been a fool to pass up the greater reward for the lesser.

How Duke shaped or didn't shape in the cockpit may be irrelevant to will-Surtees-make-it speculations, because a training that carries one man over the barrier won't necessarily do likewise for another pupil from the same school. But Duke, never doubt it, had great talent as a driver. I saw him race twice, once in the B.R.D.C. Empire Trophy on the old Douglas circuit in the Isle of Man, once at Goodwood. This was eight years ago and I haven't forgotten it. At Douglas, driving one of the then-current 2.6 DB3's, at a considerable disadvantage in cubic inches compared with some of the competition, and an even greater disadvantage in experience, he turned a brilliant all-powers sports car lap record before the Aston went out with a shortage of sparks. At Goodwood, with the same equipment, the handicapper gave him a 25 seconds start in fourteen miles on Moss and his C-Jaguar, which again had nearly a liter's superiority over the DB3. Working as hard as I'd ever seen him work, Stirling only shortened the gap by about half its original length, finishing decisively behind the meteorcyclist.

It's historically interesting, too, that in the first race won by Mercedes after the war, Prix de Berne of 1952, the next-up driver behind the 300SL steamroller that filled the first three places was — Geoff Duke. Behind him again came the leader of the Aston team, Reg Parnell, Britain's most experienced G.P. driver of the day.

Surtees hasn't forgotten what happened to Duke back in 1952, and this I think is what scares him when admirers want to measure him for a wreath of laurels he feels he may never wear. Also he's anxious to avoid alienating the Agusta brothers, heads of the MV firm. There isn't anything in his Agusta contract to prevent him racing cars between his MV engagements this year, which exclude non-classic meetings and consequently aren't too numerous. If, if he repeats, things go right for him in the car field, he'll probably ease gradually out of leathers and into linen. His motorcycle commitment

terminates at the end of 1961, and whether he renews it will depend entirely on the course of events between now and then.

In America, where one imagines motorcycling to be identified in the public mind with *Wild One* types, it's perhaps hard to comprehend the relative respectability the two-wheel sport enjoys in Europe. Surtees, for instance, as a result of his second consecutive double World Championship last season, was elected Sportsman of the Year in ballots organized independently by the British Sports Writers' Association, the British Broadcasting Corporation, the *DAILY EXPRESS*, and *Caltex* in Italy. Popular and perennially newsworthy as he is, Stirling Moss only ranked fifth in the Sports Writers' election. Donald Campbell, with the world water speed record under his belt, came second.

If, and just to please him I'll repeat his favorite conjunction, if John Surtees vindicates the Parnell/Yorke judgment, he'll have plenty of precedent behind him. Malcolm Campbell raced bikes first, cars afterwards. So did Fred Dixon and Charlie Dodson, motorcycle T.T. winners who both subsequently won the car T.T. too. The career of Bert Denly, Brooklands and Monthéry pastmaster on Nortons and later co-breaker of countless international and world records with George Eyston, followed the same pattern. Likewise Nuvolari, Taruffi, Varzi, Rosemeyer. Ernst Henne and Georg Meier, the former the world's fastest rider in the 30's, latter the winner of the fastest interwars motorcycle T.T., were two out of only twenty-four drivers to whom Auto Union and Mercedes entrusted a wheel in the period of Germany's absolute G.P. ascendancy.

Raymond Mays, B.R.M.'s racing director, has always had a predilection for expert motorcyclists when looking for car talent. He wanted Leslie Graham, 500 cc class World Champion in '49, for the Bourne stable, and would likely have lured him out of the saddle if Les hadn't killed himself first. From his studies of the subject, Mays once told me, he'd come to the conclusion the best type of racing motorcyclist, aside from any transmutable talent he possessed for getting around circuits faster than most, had these four credits in his ledger:

1. He knew his machine, had a natural sympathy for things mechanical, and usually his knowledge was self-taught, which is the best kind there is.
2. He was susceptible to team discipline.
3. Weaned on the most vulnerable thing on wheels, he tended to drive as he perforce had to ride, with a not-necessarily-visible regard for his own survival and that of an horrendously expensive piece of machinery.
4. He wasn't a showoff — "because a speeding motorcycle is perhaps the hardest thing in the world on which to play to the gallery, and the no-swank habit, like other good ones, sticks when he switches from two wheels to four".

When Duke stayed out of Moss's range the very first time he raced a car, the Motor stuck its august neck out with the comment, "Here we might prophecy that we shall have a great driver of the future." I'll extend my own neck and say the same for Surtees.

—DM



## FLAMES, FOG AND FAST MACHINERY

Continued from  
page 33

All the Porsche Spyders made a mess of the start, the foggy, foggy dew settling into the huge Webers and fouling up their quick-starting ability. Bonnier and his friends had to sort their way through a mass of traffic to get anywhere near the front.

Among the Grand Touring cars, but running in the sports car class since they were un-homologated, spectator attention was drawn to the two Abarth Carreras, one factory car being fitted with experimental Porsche disc brakes. It seems that over the year Zuffenhausen has been able to pare the weight of these brakes down noticeably and we wonder how long it will be before discs are available for Porsches. Spyders, incidentally, are still using drum brakes. Another interesting Porsche at Nurburg this year was a disc-braked Super 90 coupe with fuel injection. Driven by Schulze and Einseidel, this car gave a good steady account of itself though it's apparently not much faster than the production S90, but has superior torque characteristics.

Fog—the likes of which had never been seen during a race since 1936 when Rosemeyer, the *Nebelmeister* or "fog-master", won the German G.P. in an Auto Union in swirling fog. If there was a master of the fog this year in the 1000-Km. Race it was Dan Gurney, who took over from Moss after the leaking oil pipe had been repaired. Parts of the circuit had already been wrapped in fog but soon the grey shroud began to move into the pit area and start-and-finish line. One just couldn't see five hundred yards, and coming down the almost-two-mile straight from Döttinger Höhe to Tiergarten was the most difficult of all, flat-out and just hoping there was no-one in your way. Gurney pressed on with no real practice under his belt and not knowing the circuit as well as Moss, yet he was soon in third place. The leading Ferrari stopped with valve trouble; letting the Bonnier/Gendebien Porsche into first slot. But by now Moss had taken over from Gurney and there was no stopping the Maserati. The Porsche came in for a driver change and Moss moved into the lead.

Team manager Tavoni had already put Phil Hill into the fourth-place Allison/Mairese Ferrari and Phil pulled the cork out but was not able to do anything about the Porsche, which had a 2½-minute margin two laps before the end.

Stirling Moss and Dan Gurney brought Camoradi its first international victory; Piero Taruffi's help cannot be underrated and we hope that the "Silver Fox" stays with Camoradi the rest of the year. For Le Mans, Goodyear will most probably have their new tire in the proper size and despite the fact that Moss will not be driving for them there, to win Le Mans you don't necessarily need Stirling Moss.

—JLA

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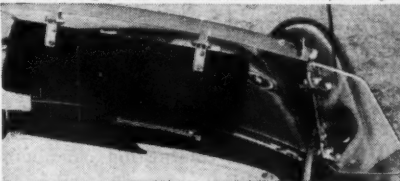
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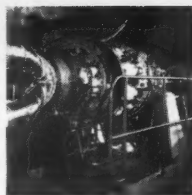
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## TARGET SPEED 500!

*Continued from  
page 51*

at Bonneville is 15 miles; There are thus seven miles at each end of the measured record stretch. The problem resolves itself into two main tasks: to control the run-up so the maximum speed is reached at the entrance to the measured mile without too much wheel-spin (which would overtax and destroy the tires), and to absorb the resultant energy of the car without causing instability or burn-out of brakes when coming to rest again. As the car isn't required to negotiate curves, wheel lock need only be 5 degrees each way, and wheel deflections only 2 inches above and below the static position.

The finished weight of the car is estimated at 8,000 pounds. As the engine develops the equivalent of slightly more than 4,000 bhp, as a combination of shaft horsepower and thrust, the car has a power-to-weight ratio of 2 pounds per bhp. Overall length is 30 feet, width 8 feet and height 4 feet, 8 inches. Wheelbase is 13 feet, 6 inches and tracks are equal at 5 feet, 6 inches.

### INTERNAL AIRFLOW

The Proteus engine, placed approximately centrally, is of the free-turbine type. It is just over 8 feet long, has an outside diameter of 40 inches, weighs approximately 3,000 pounds, and consumes fuel at the rate of 360 gallons per hour under full power, with the compressor turbine shaft running at 11,600 rpm.

Air enters through a nose intake which divides into two ducts to pass on both sides of the driver; the insulated exhaust pipe divides four ways around the rear drive, two branches passing above and two below the rear-wheel differential and drive shafts. The extra rear drive and special exhaust have been developed by Bristol-Siddeley Engines, Ltd.

Turbine air is first fed into a plenum chamber and then through a 1/4-inch mesh guard to the compressors, which have twelve axial stages and a single centrifugal stage in that order. After compression, the air is led into eight combustion chambers into which the fuel is injected.

The first turbine, with two stages, is coupled directly to and drives the compressor. The excess power, governed by the "throttle" which adjusts the amount of fuel feed, is absorbed by the separate power turbine which also has two stages, and is mounted on a single inner shaft running from end to end of the engine (the compressor shaft is hollow to permit this) to the two sets of 3.6 to 1 final-drive gears for the front and rear wheels.

### NO GEARBOX NEEDED

Since there is no mechanical connection between the two main moving assemblies of a free turbine engine, the compressor system can always run at optimum speed, while the speed of the power turbine can be varied within wide limits. The two turbines form a fluid (gas) coupling; the engine is flexible in performance and can

deliver high torque at low power-turbine speeds. These characteristics enable clutch and transmission gear to be omitted. Regulations governing the record attempt no longer call for a reverse gear.

Largely because the hot parts of the Proteus and similar gas turbines are very thin sections, there is no need for a long warm-up period; full power can be delivered within a minute of starting, and the shut-down can be equally quick. The unit can idle indefinitely, yet is designed to run for long periods at full speed without prejudicing reliability.

### SUDDEN START AND STOP

Utah's Salt Lake is 4,300 feet above sea level, and test-bed power will not be re-established by intake pressure recovery until near-maximum speed is reached. For the record attempts the engine will be run up to a predetermined compressor speed with the car held stationary on the disc brakes. Then the brakes will be released and the acceleration controlled. To avoid tire damage, full power cannot be applied until the car reaches 400 mph!

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### PORSCHE AND PIGS

C. O. La Tourette outdoes himself with a cutaway of the brand-new Formula 2 Porsche—a glimpse at 1961's Formula 1 Grand Prix car—and Stan Mott reveals some of the latest products of the engineers of Automobili Pignatelli.

A staggering task has to be performed by the Girling disc brakes in bringing the car to rest from 400 mph in 60 seconds. For each of the four discs there are two magnesium calipers, each having three pairs of linings on both sides of the disc—24 pairs of linings which have been developed specially to eliminate fade. The brakes are power-operated with compressed air at 3000 p.s.i. and the circuits are duplicated for safety. Heat generated by the friction of this enormous retardation causes the discs to glow red, then yellow, at a temperature of 1,600 degrees F. The air brakes, opening to the sides, are controlled by a lever on the left side of the cockpit.

The frame is built like an aircraft fuselage. There are four longitudinal members formed from light-alloy honeycomb foil, 0.75-inch thick and faced on both sides with resin-bonded alloy sheeting. These members are joined with four cross-members of similar material forming separate compartments for the forward cockpit, engine, drive shafts, gear units and wheels. Two fuel tanks, with a total

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capacity of 25 gallons, are mounted on both sides, just forward of the rear wheels. From the steering wheel worm and shaft a system of chains and sprockets transmits the effort to another wormshaft coupled directly to the wheels.

At each wheel, suspension is by short parallel wishbones, with a Girling oleo-pneumatic spring-shock unit mounted diagonally. The springing medium is nitrogen, and suspension loads are transmitted to this gas through hydraulic fluid. Fluid flow is controlled by poppet valves to provide the required damping and the amount of damping on rebound is adjustable externally to suit the prevailing conditions of the surface.

#### DESIGN AND DRIVERS

Design work began in January, 1956 and has been undertaken by Norris Brothers, design consultants, of Burgess Hill, Sussex, who also designed the Bluebird boat. Donald Campbell has received a great deal of help from the British industry in the design and manufacture of this car; the frame and bodywork were built by Motor Panels, Ltd., a member of the Owen organization. In all, 68 companies have co-operated. Final assembly was supervised by Leo Villa, who has served as mechanic to both Campbells. In view of the importance of the project to British prestige, and so that it could carry on if Donald Campbell were incapacitated, a 10-man trustee committee was formed.

Two reserve drivers to Donald Campbell have been nominated also. Both in the RAF, they are Squadron Leaders Peter Carr, and Neville Duke. It is no coincidence that each is an experienced high-speed pilot, for it was felt that driving a land speed record car is related more closely to high-speed test flying than driving a Grand Prix racing car. Carr retired from the RAF earlier this year to co-ordinate the record project. He will serve as first reserve driver. No novice when it comes to high speeds, he formerly commanded an RAF Hunter Squadron and earlier was active in secret ultra-high-speed research flying. Previously, he was stationed at Las Vegas, Nevada in connection with development work on the F 100. It was at Las Vegas that he met Donald Campbell during the water speed record attempt on Lake Mead in 1955. Duke, of course, is the well-known test pilot who played such an important part in breaking the sound barrier.

#### PLANNED TO SUCCEED

Appropriately, in view of the above, many different shapes for the C.N.7 Bluebird were tried out in the wind tunnel. And not many tunnels will suffice, either, for this car is reaching into those speed ranges where jet aircraft took over from prop-driven types. Its statistics are as spectacular as its target speed: number of drawings needed: over 5000; man-hours expended: over one million; money spent: in the vicinity of three million dollars. In every way this is a land speed record attempt in the classic, spare-no-expense tradition. It's planned to succeed and will probably succeed. Whether or not it will outperform American machines like Mickey Thompson's revised quad-Pontiac or Athol Graham's Allison-engined car, only Bonneville can tell. Soon after his first run on September 12, Campbell will know. —HM



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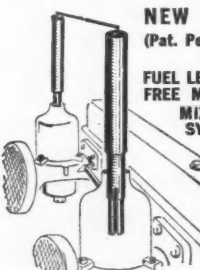
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## LOTUS BLOOMS AT MONACO

Continued from page 68

watched one day of training from a hotel window overlooking the medium-fast Casino curve and this aerial view was an eye-opener. Moss was the only Lotus pilot that could get the car's tail out in a noticeable power slide, and when this happened you knew Moss was trying. The roadholding of the new Chapman design is so good that most drivers never get to the point where the rear end breaks away. When it does (with Moss it is possibly a conscious effort to provoke breakaway) only Moss can catch it.

The Lotus is fabulous coming out of tight, slow corners, the kind that Monaco is famous for. You see nothing but Moss simply driving around the corner; there is no hairy slide with the driver working madly away as with the front-engined Ferrari. Lotus drivers, Moss and Ireland anyway, just don't look like they are trying.

John Cooper had two of his new cars at Monaco with Jack Brabham and Bruce McLaren at their helms. "It's just tidied up a bit", says John, "a bit lighter and we've got a five-speed gearbox that is as good as anything going today."

B.R.M. came to Monaco with three rear-engined cars, for 1960 fitted with an anti-roll bar at the rear as well as up front. Wishbone suspension, coil springs, centrally-mounted single disc brake at the rear are B.R.M. specs for 1960. The car was reasonably well suited to Monaco, but not so much so as the Lotus. Here is a complete list of the sixteen best training times over the three days of practice.

1. Moss (Lotus-Climax) 1'36.3"
2. Brabham (Cooper-Climax) 1'37.3"
3. Bonnier (B.R.M.) 1'37.7"
4. Brooks (Cooper-Climax) 1'37.7"
5. Bristow (Cooper-Climax) 1'37.7"
6. Graham Hill (B.R.M.) 1'38"
7. Ireland (Lotus-Climax) 1'38.2"
8. Von Trips (Ferrari) 1'38.3"
9. McLaren (Cooper-Climax) 1'38.6"
10. Ginther (rear-engined Ferrari) 1'38.6"
11. Phil Hill (Ferrari) 1'38.6"
12. Salvadori (Cooper-Climax) 1'38.7"
13. Gurney (B.R.M.) 1'38.9"
14. Stacey (Lotus-Climax) 1'38.9"
15. Surtees (Lotus-Climax) 1'39"
16. Trintignant (Cooper-Maserati) 1'39.1"

It's incredible how close all of these times are. Maurice Trintignant had a terrific time setting his incredibly fast 1'39.1" and was really on his ear all the way 'round.

Practice was marred Friday morning by Cliff Allison's accident in a front-engined Ferrari. Cliff left his braking a hair too late before the chicane and as he braked hard a rear wheel started to lock up and the car went into a slide. The right rear wheel nicked the chicane wall. Cliff was violently ejected and thrown clear, but suffered a bad break of the left arm, as well as certain other internal injuries not clear at this writing. Cliff was trying as hard as he knew to make a good time in practice.

Saturday's final practice session for Formula 1 cars was previewed by the Monaco Formula Junior race. There need only be one comment about this race: the best of Italy's Junior drivers and cars were left way behind in the dust by both the Formula Junior Lotus and Cooper. Jim Clark in the Lotus turned a 1'45" practice lap, faster than some Formula 1 cars and nearly equal to the Formula 1 lap record of 1955. Even Colin Davis in the OSCA could not approach Clark's times.

## GRAND PRIX OF MONACO May 29, 1960 100 laps, 1.9 miles per lap

Pos.	Driver	Car	Time
1	Moss	Lotus-Climax	2:53:45.5 (67.3 mph)
2	McLaren	Cooper-Climax	2:54:37.6
3	Hill	Ferrari	2:54:47.4
4	Brooks	Cooper-Climax	2:54:29.7 (1 lap behind)

Fastest lap: McLaren (Cooper-Climax) 1:36.2

Sunday's Grand Prix is a spectacle equalled nowhere else in the world, except perhaps at Indianapolis. At Monaco a packed field of 16 racing cars take part in the only "round the houses" race left. Starting grid positions were drawn from a hat for those who had the same times. When the flag fell, Jo Bonnier in the B.R.M. was already under way, moving in among Moss and Brabham and Brooks on the front row, and was first into the gasworks corner. Bonnier led for the first 17 laps, hotly pursued by Moss, Brabham, Brooks, Phil Hill, Graham Hill, and Bruce McLaren. Bruce set fastest lap on round number 11, turning a 1'36.2".

Then the steady flow of retirements and gyrations began. Surtees in the Lotus (broken gearbox), Salvadori in his Cooper, and Trintignant retired early in the race. Moss went into the lead on lap number 18, then gave it up to Brabham after seven laps. On the 41st lap, Brabham spun in a big way at St. Devote corner as he attempted to stay ahead of Moss. The Cooper banged the wall and put Jack out. McLaren moved up into third place, finally getting in front of Phil Hill's Ferrari after a battle that had everybody on their feet. Bonnier held a steady second place until Moss's engine was heard to sputter, leading him to pull into the pits for a loose plug lead to be refitted. On lap 67 Graham Hill spun at the gasworks (this begins to sound too much like the Grand Prix du Roc) and knocked down the stairs to the timer's house. Rain fell at half-distance making the track extremely slippery and, as a result of the slow-up, this year's race average was not a new record.

Ginther retired the new Ferrari with a broken ring and pinion at three-quarter distance. Trips put his Ferrari onto the sidewalk on lap 67 and left it there. The paint on the rear was blistered from a small fuel fire, and the clutch was giving him trouble as well. Phil Hill drove the only Ferrari to finish, in third place.

Four out of sixteen cars finished the 195-mile race, Moss, McLaren, Hill, and Brooks, the latter driving a Yeoman Credit Racing Team Cooper-Climax this year, until Tony Vandervell finishes his Vanwall-powered Lotus. A pity the Scarabs were not in the race but Lance hasn't decided to cut up the chassis just yet.

—JLA

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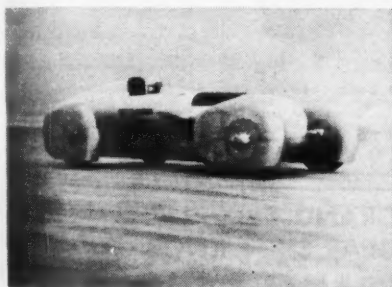
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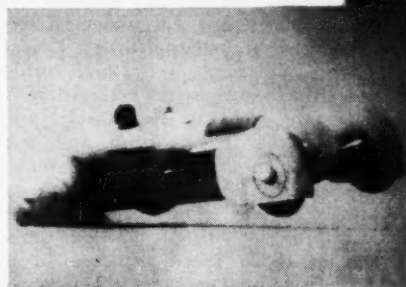
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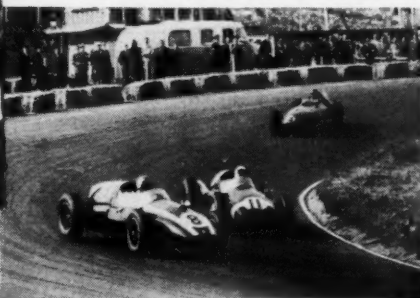
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## JAGUAR 3.8

Continued from  
page 72

power ratings 5 units each, the effect throughout the rev range is said to be exceedingly worthwhile. With domestic cars using up to two ratios more, we found premium gas satisfactory for all but the most arduous conditions.

The accompanying acceleration curve is graphic demonstration of the Three-Eight's sporting performance. Considerable care is necessary to avoid excessive wheelspin when you start in first with the revs raised high. About 2000 seems best. First gear could usefully be raised, for the 59% step to second requires a leisurely pause because of the weak synchromesh. For the same reason, the angle of the pendant accelerator pedal is annoying as it makes the desirable heel-and-toe downshifts nearly impossible. A solution is to install a Corvette gearbox (we have come a long way) as one 3.8 owner has done; another is to take full advantage of the Jaguar engine's remarkable flexibility. The 3.8, which may be comfortably started in second, pulls smoothly and strongly from as low as 14 mph in fourth. And up to some two miles per minute, if you can find the opportunity.

The trunk is large (13½ cubic feet), perhaps at the expense of a too-small gas tank. Engine compartment accessibility is very good for those items which are inspected frequently, except the battery. Inside and out, everything seems to fit properly and work nicely. But then, Jaguar buyers are a demanding lot. The Dunlop disc brakes are smooth and strong and easily a match for this car's power.

The Jaguar's steering takes a little over two turns from straight ahead to full lock in either direction, at which point the turning diameter is a bit under 36 feet. This is quicker and sharper than a Corvair or Valiant, for example, yet at high cornering forces the steering seems extraordinarily slow. On the 400-foot Test Circle, with the tires at 34/31 psi, front and rear, (the pressures recommended for continued high speed use), an initial setting of some 55 or 60 degrees grew with increasing rapidity to 95° at 30 mph and 225° or so at the maximum speed achieved of 45 mph (indicated). On the circular graph used in SCI's Road Research Reports, this would put the 45 mark at about 8 o'clock, thoroughly counterclockwise compared to any car we've tested before. This is understeer with a capital U, yet it doesn't keep keen 3.8 owners from racing.

For all of this, the 3.8 is a nimble car. Its engine's roar is somewhat muted but not its bite. If the tire noise could be equally hushed, Jaguar might commandeer Bentley's old motto and call the 3.8 "The Silent Sports Saloon". Or to paraphrase a more modern Bentleyism, people who feel diffident about driving practically any kind of car may find what they're seeking in a Jaguar. Sybarites will find creature comforts, while performance- and status seekers will find just what they're looking for.

—SCI



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## **ASSAULT WITH INTENT TO WIN**

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### **VERY SPECIAL TIRES**

Each new breakthrough in drag racing—crossing the thresholds of 160, 170, 180, 190 and, recently, 200 mph in the standing-start quarter mile—would have been impossible without tires capable of transmitting increasing amounts of horsepower to the pavement. The most obvious feature of the evolution of ultimate-traction tires has been the steadily increasing width of their flat, unpatterned "slick" treads. Control of circumferential growth at high speeds and of glazing of the tread compound as a result of violent wheelspin have been more subtle challenges to tire designers and rubber chemists.

That good drag-racing tires hold up excellently under the above speeds in the quarter mile seems to be miraculous. However, these runs are over with in eight or nine seconds (at this writing Ted Cyr of California is the first man to cover 1320 feet in less than eight seconds; on May 14 he clocked 188 mph in 7.962), so that there is time for heat buildup to take place only in the outer surface of the tread. But six-tenths of a mile and a full mile pose entirely different, unique problems.

### **GOODYEAR DOES THE JOB**

One of the big chances that Thompson took, and that anyone must take who challenges his acceleration records, was that of tire failure. Until Mickey made his May 14 runs there was little or no information or experience to guide tire engineers in designing tires for this specific level of performance. With the same skill that they demonstrated in the construction of Thompson's L.S.R. tires, Goodyear engineers produced 8.5-inch-wide drag slicks that stood up faultlessly (in spite of their thick, heavy shoulders) against the most savage acceleration in history.

There is, interestingly, a close relationship between these drag slicks and the Goodyear Sports Car Specials which Thompson ran at the front of his newest vehicle. A look at the Goodyears on the Formula 1 Scarabs will illustrate the point: their low-profile, ovoid cross section makes for optimum contact area. They can be called patterned slicks.

### **MICK MAKES IT GO**

Thompson's Assault I record machine is not the world's hottest quarter-mile vehicle. There are numerous others that are quicker and faster in the quarter and that, properly geared, probably would be more rapid over longer distances. Some, perhaps, ride, track and handle better and permit the delivery of more power to the pavement. But the point is that it takes more than a hot machine to do what Thompson has done and continues to do. It takes enterprise, organizational ability and courage, with all of which Thompson is generously endowed. Plus, Mick is one hell of a handler. There were a dozen times on May 14 when tragedy would have replaced victory if Mick's corrections and control had not been consistently right.

—GB

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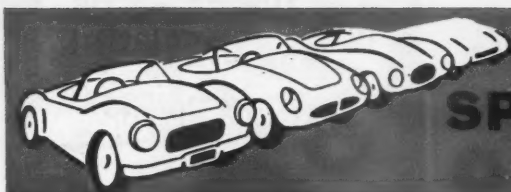
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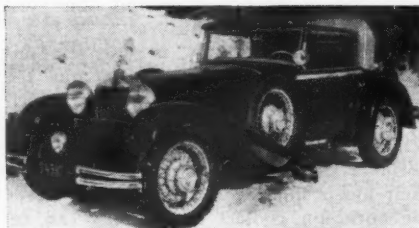
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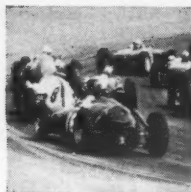
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## HOLLAND'S SANDY CIRCUIT

Continued from page 70

he seems to have taken a liking to Formula racing, all things considered. The Scarab team was really disillusioned at Monaco; Trautman and Barnes, for instance, have always been associated with winning equipment, and to have their Scarab blown off by Coopers and Lotuses was discouraging to say the least. Discouragement, however, has not led them to desperation nor even to thoughts of giving up. The latter would be downright stupid at this point for progress has been made and it is hoped that at Spa Goodyear will have the right tires available, and that the present two-week break will allow the RAI crew to make further progress in setting up the car. The next race will be on the very fast Spa-Francorchamps circuit in the Ardennes Forest in Belgium and frankly if I were driving there I'd rather be in a Scarab than in a Lotus, which looks like an oversized matchbox on wheels.

Performance of the Scarab's four-cylinder engine has been above expectations. As this is written the team doesn't have a spare engine and is amazed that engine difficulties haven't plagued it along with the chassis problem. Between Zandvoort and Spa they will have a look at the engines but up to now all has been well oil-tight (except for a brief problem at Monaco when the breather pipe on the crankcase exuded a bit of oil onto the chassis and from there to the road) and obviously reliable.

Lance didn't endear himself to the Dutch organizers. Briefly, the story is this: as at Monaco, the regulations for the Dutch race stipulated that the starting grid would be made up of the fifteen fastest qualifiers from those invited. But a second paragraph stated that the organizers could increase the field if they wanted to. Thus it seemed that even if the Scarabs weren't as quick as the rest at least one might be able to start, the whole team gaining much-needed experience thereby. Halfway through practice, after considerable belly-aching not only by Lance but by others like Centro-Sud and Aston Martin, the Dutch Club said, "Okay, twenty cars may start but we'll just pay starting money to the first fifteen." Lance immediately said, "Sorry, we don't start without starting money. If we do, we'll start a precedent and be treated the same way at the next race."

When practice was over there was a mad rush for the press office to get the qualifying times—times put out by the official timekeepers which were already subject to doubt, as many didn't agree at all with those taken by the experienced timekeepers of each team. And when the final list was published it appeared that the times had been altered deliberately by the organizers to admit or exclude whom they wanted from the race. I don't state that they did this for I have no real proof, but the whole thing smelled—smelled so high that even Reg Parnell,

Aston Martin team manager, who has been around European racing for many a year, immediately pulled his lone Aston out and sent it home in protest. (The Aston was not competitive and was probably not even as quick as Daigh in the Scarab but the point is that the organizers could have saved face by a last-minute change, saying, "We'll pay everybody, a bit less, perhaps, but everybody; we're sorry and won't you please start?" But this they weren't clever enough to do.)

Lance received a phone call a few hours before the race offering Daigh the 20th slot on the grid, but for no money, and Lance turned it down abruptly. But he stuck to his guns and all the more power to him, for I'm sorry to say that the Dutch club has never inspired confidence in the way its Grand Prix is run. Flag marshals are often just not doing the job and the timekeeping is now almost a scandal. Lance and his crew are probably not nearly so discouraged or disillusioned by their car as they are by the way European racing is run.

This whole business of qualifying for a G.P. has everyone complaining. It is perhaps justified at Monaco where a relatively small circuit limits the number of cars safely able to start but this doesn't warrant the injustice done a person like Bruce Halford who did his nut turning a fantastically fast lap at Monaco in a last-minute effort to qualify, only to miss out by a tenth of one second.

David Brown's racing organization brought a new Grand Prix car to Zandvoort. Its wheelbase is four inches shorter and it has a narrower tread. The car is powered by a fuel-injection engine, the injection pipes running directly into the cylinder head at an upward angle, below the air intake throats. The six-cylinder unit is virtually the same as last year's except for this one basic modification, giving smoother but not necessarily more power at lower revs. Unfortunately, handling of the new Aston wasn't good and Salvadori complained of vicious sudden oversteer when least expected; he just wasn't able to cut fast laps. The Aston sounds great, though, and vies with the Ferrari for sheer spectator appeal by virtue of a spine-tingling gear whine noticeable as the driver shuts off for a corner. If both this Aston and the Scarab had come along two years ago they would have been sensational.

Minus the Scarab and Aston, then, the field massed itself on the grid with Moss, Brabham and Ireland in the front row, and Graham Hill (B.R.M.) and Bonnier (B.R.M.) in the second. I watched the opening laps from the inside of the Tarzan corner at the end of the straight and almost as the flag fell and the field began to move I saw a red Ferrari darting ahead, through the group of cars in the front two rows; it was Phil Hill charging from the fifth row and into the first corner he was fifth behind Stacey, Ireland, Moss and Brabham. Brabham led the entire race in the 1960 Cooper, though in the beginning he was chased by Moss 'till the Australian's car threw a paving stone up—directly into Stirling's right front tire, puncturing same and forcing Moss to stop at the pits for a good minute and a half while Alf Francis and his crew frantically changed the wheel.

Phil Hill had meanwhile been passed by Dan Gurney in the B.R.M. On the eleventh lap Dan came storming past the pits and braked at his normal shut-off point. The pedal went halfway down and things began to happen: the single rear disc failed completely, resulting in all the braking effort being transferred to the front wheels. They locked up and Dan's car slid out of control down the straight, twin plumes of blue smoke pouring off the front wheels.

There was no question about attempting to make the corner, for at what I judged to be at least 75 to 80 mph, Dan's B.R.M. shot off the road like a projectile across the sand dunes and into the air, then disappeared from view. Crowds rushed towards the scene and in a few minutes Dan appeared, walking slowly back to the pits, one hand heavily bandaged. The car had turned over, luckily coming to rest upside-down in a depression. It was a very narrow escape for Dan, but sadly an 18-year-old boy had been killed as the car shot close to the spectator area and through a barbed-wire fence.

There had been one other close call—this one in practice—when an improperly seated knock-off wheel nut came loose on Lance Reventlow's Scarab, the wheel sailing away and Lance coming to a three-point landing in the sand at the side of the road. The car and Lance hardly suffered a scratch.

B.R.M. fortunes were not much better at Zandvoort, despite Graham Hill's well-earned third place. Gurney's accident put a cloud over the team, making one wonder if Bourne will finally decide to remove the troublesome single disc brake at the rear. Jo Bonnier's car never really ran right, its engine coughing and sputtering, finally it blew up entirely and Jo skidded on his own oil, the second lucky escape of the day for B.R.M. Graham Hill would have lost his third place to Moss had there been just one more lap to go. On the last lap less than 12 seconds separated the two cars, and maestro Moss was gaining handfuls of time each lap.

Jack Brabham and Stirling Moss both gave the crowd their money's worth. Jack drove hard and beautifully, even managing to throw off the opposition by throwing stones at it! All praise to Champion Jack; he's not a Moss but a fast, steady, brilliant driver and it's about time that luck came his way this year. The opening laps were very exciting with only a second separating his leading Cooper and Stirling's Lotus.

Summing up the Grand Prix season so far, there's only one car that really handles and that's the Lotus. Even the 1960 Cooper looks twitchy on the straights but does corners better than last year's model. Chapman's four-wheel matchbox is sensational and Moss may yet be able to make 1960 his year. Ferrari is way out in left field despite the rear-engined car. They still seem to lack just plain know-how in getting a car right. B.R.M.'s handling is far from perfect and in addition to chassis problems, the engines are giving them trouble. The Scarab and Aston Martin have weight and horsepower problems plus chassis difficulties. But Daigh and Reventlow are learning fast and the American underdog may yet show the Europeans something! —JLA



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